The PHOTOFACT® Servicer

SET 551 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT. 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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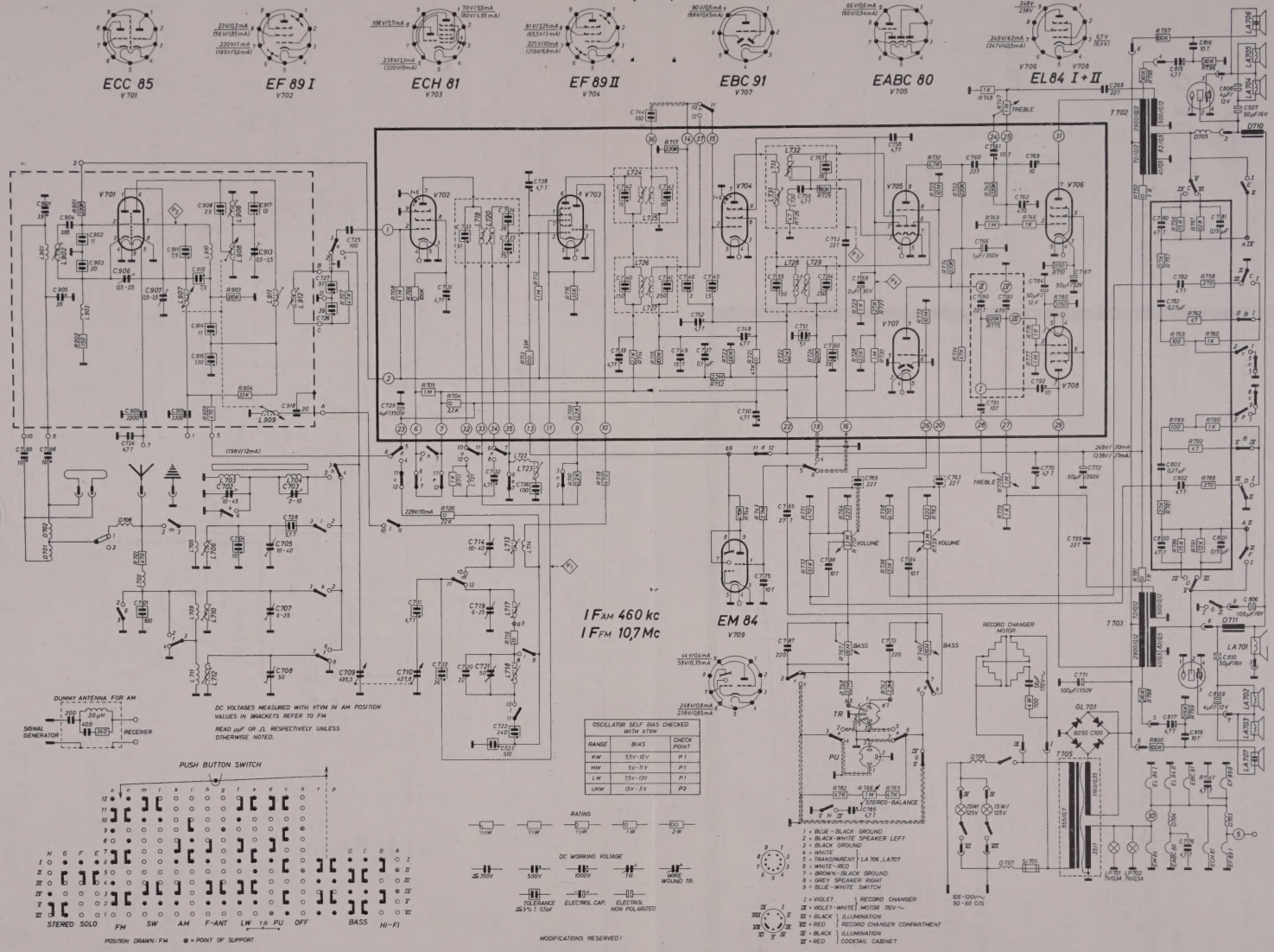
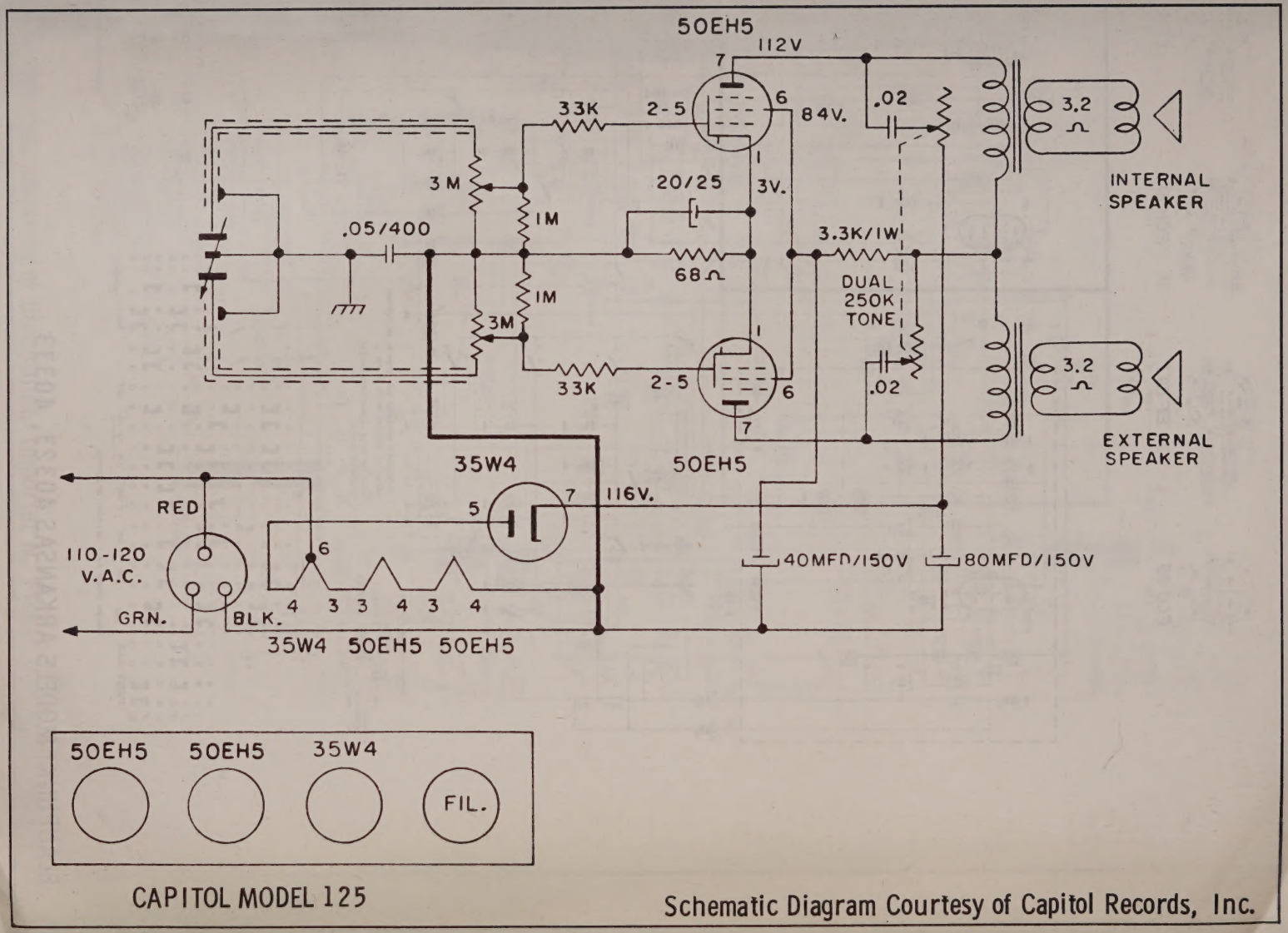


BLAUPUNKT MODELS ARKANSAS 40323, 40333

Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company



CAPITOL MODEL 125

Schematic Diagram Courtesy of Capitol Records, Inc.

PHOTOFACT® Folder

OLYMPIC CHASSIS
KA, KAU, 129, 162

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

OLYMPIC CHASSIS
KA, KAU, 129, 162

MODEL KA260

OLYMPIC CHASSIS
KA, KAU, 129, 162

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OLYMPIC CHASSIS
KA, KAU, 129, 162

OLYMPIC CHASSIS
KA, KAU, 129, 162

MODEL KA260

TRADE NAME	OLYMPIC MODELS	TV Chassis	AM Tuner	VHF Tuner	VHF-UHF Tuner
	CA235, TA230	KA		CL26194	
	CA235U, TA230U	KAU			CL26405
	KA260	KA	129	CL26194	
	KA260U	KAU	129		CL26405
	KA261	KA	162	CL26194	
	KA261U	KAU	162		CL26405
MANUFACTURER	Olympic Radio & Television Inc., Division of the Siegler Corp., 34-01 38th Ave., Long Island City 1, N. Y.				
TYPE SET	Television Receiver (Some Models with AM Tuner and 4 Speed Automatic Record Changer *)				
TUBES	TV: Fifteen AM Tuner 129: Two AM Tuner 162: Four				
POWER SUPPLY	110-120 Volts AC, 60 Cycle				
RATING	160 Watts, 1.5 Amp. @ 117 Volts AC (110 Watts, 1.0 Amp. with Selector in Phono position (Less Motor) or with Selector in Radio position (Using Tuner 129)				
TUNING RANGE	TV: Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) AM Tuner 129 & 162: 540 - 1620KC (455KC IF)				

*FOR SERVICE INFORMATION ON RECORD CHANGER #RX25907-2 - SEE SIMILAR UNIT - PHOTOFACT SET 381 FOLDER 11

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 6 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

The filament string and LV Supply are protected by fuse wires. For location, see M1 (LV supply wire), M2 (Filament wire) in photo "Chassis Bottom View". The horizontal sweep section is protected by ½ Amp. fuse. For location, see "Tube Placement Chart".

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, remove Channel Selector knob, Fine Tuning knob, and front face-plate.

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust Sound Clarifier (Quad. Coil Slug) for minimum buzz and maximum sound.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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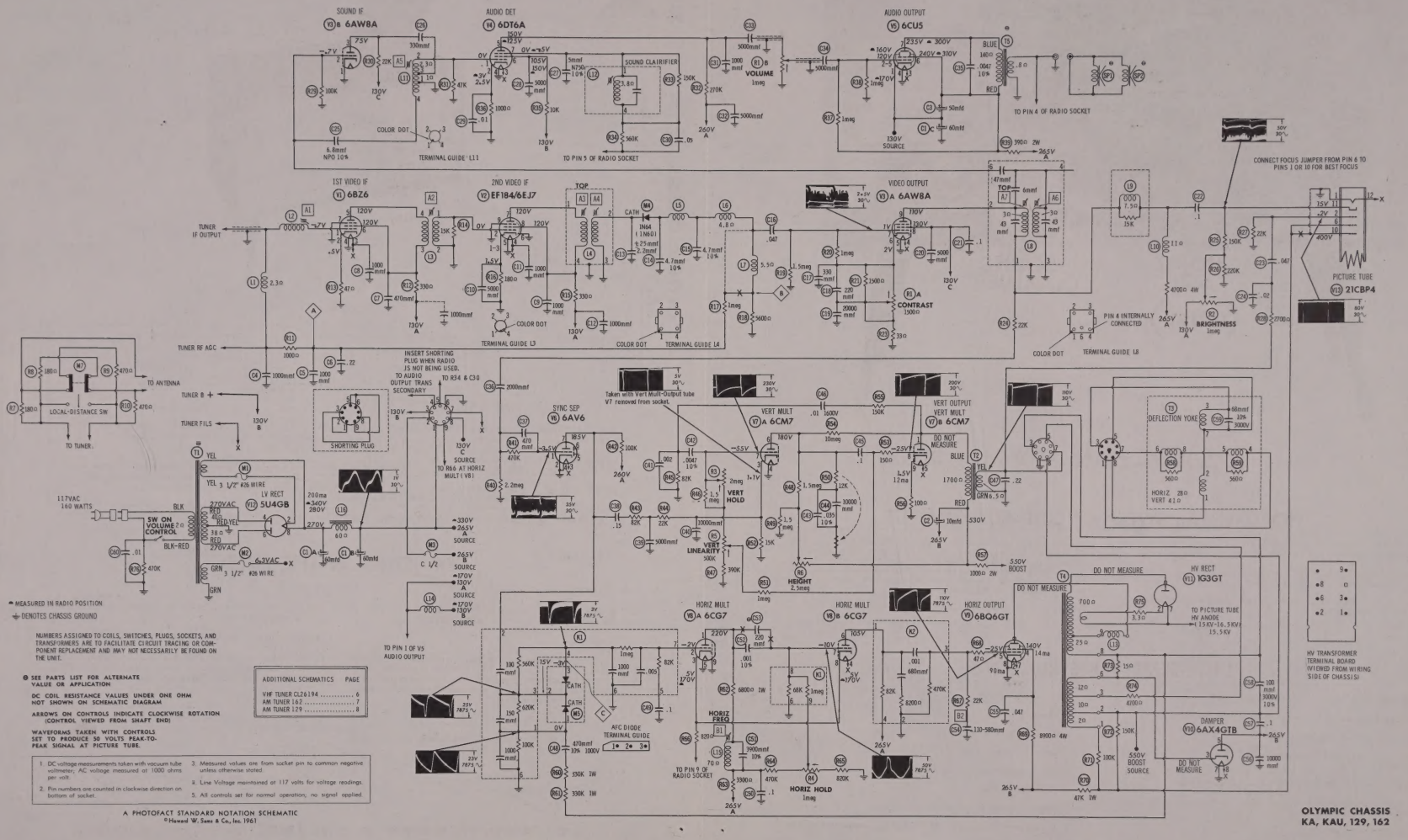
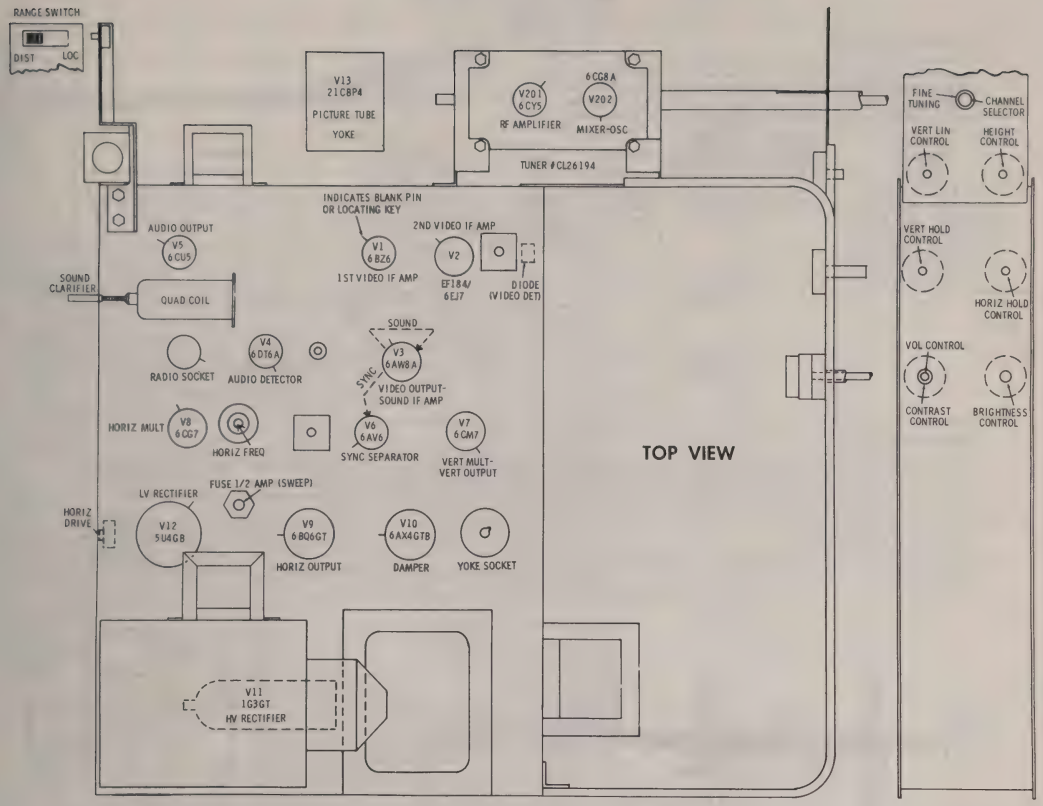
KC636


SOUND IF
V3 B 6AW8A
AUDIO DET
V4 6DT6A
AUDIO OUTPUT
V5 6CU5
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 EF184/6EJ7
VIDEO OUTPUT
V3 A 6AW8A
SYNC SEP
V6 6AV6
VERT MULT
V7 A 6CM7
VERT OUTPUT
VERT MULT
V7 B 6CM7
HORIZ MULT
V8 A 6CG7
HORIZ MULT
V8 B 6CG7
HORIZ OUTPUT
V9 6BQ6GT
HV RECT
V11 1G3GT
DAMPER
V10 6AX4GTB
PICTURE TUBE
V13 21CBP4
RECT
V12 5U4GB
VOLUME
CONTRAST
BRIGHTNESS
VERT HOLD
VERT LINEARITY
HEIGHT
HORIZ FREQ
HORIZ HOLD
SOUND CLARIFIER
COLOR DOT
TERMINAL GUIDE L11
TERMINAL GUIDE L3
TERMINAL GUIDE L4
TERMINAL GUIDE L8
TUNER IF OUTPUT
TUNER RF AGC
TUNER B +
TUNER F1LS
TO TUNER
TO ANTENNA
LOCAL-DISTANCE SW
SHORTING PLUG
INSERT SHORTING PLUG WHEN RADIO IS NOT BEING USED.
TO AUDIO OUTPUT TRANS SECONDARY
TO R34 & C30
TO R86 AT HORIZ MULT (V8)
SOURCE
TO PIN 1 OF V5 AUDIO OUTPUT
TO PIN 9 OF RADIO SOCKET
TO PIN 5 OF RADIO SOCKET
TO PIN 4 OF RADIO SOCKET
AFC DIODE TERMINAL GUIDE
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 1 OR 10 FOR BEST FOCUS
PIN 4 INTERNALLY CONNECTED
DEFLECTION YOKE
HORIZ 28Ω
VERT 41Ω
TO PICTURE TUBE HV ANODE (15KV-16.5KV)
15.5KV
DO NOT MEASURE
5.5OV BOOST
117VAC 160 WATTS
SW ON VOLUME CONTROL
270VAC
6.3VAC
200ma
340V
280V
270V
60ma
#26 WIRE
BLK
BLK-RED
RED
RED-YEL
YEL
GRN
MEASURED IN RADIO POSITION
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATICS PAGE
VHF TUNER CL26194 6
AM TUNER 162 7
AM TUNER 129 8
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
HV TRANSFORMER TERMINAL BOARD (VIEWED FROM WIRING SIDE OF CHASSIS)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1961
OLYMPIC CHASSIS
KA, KAU, 129, 162

TV TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse Wire (Fil.), Fuse Wire (LV Supply), V12

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V13, Fuse (Sweep)
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, V12
Vert. off freq. V7
Horiz. off freq. Diode (Horiz. AFC), V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3, V5
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V13
Has pic, no sound V3, V4, V5

SYNC FAILURE
No vert. sync V6
No horiz. sync V6
No vert. or horiz. sync V6

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: Al thru A4, A6, A7 .... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

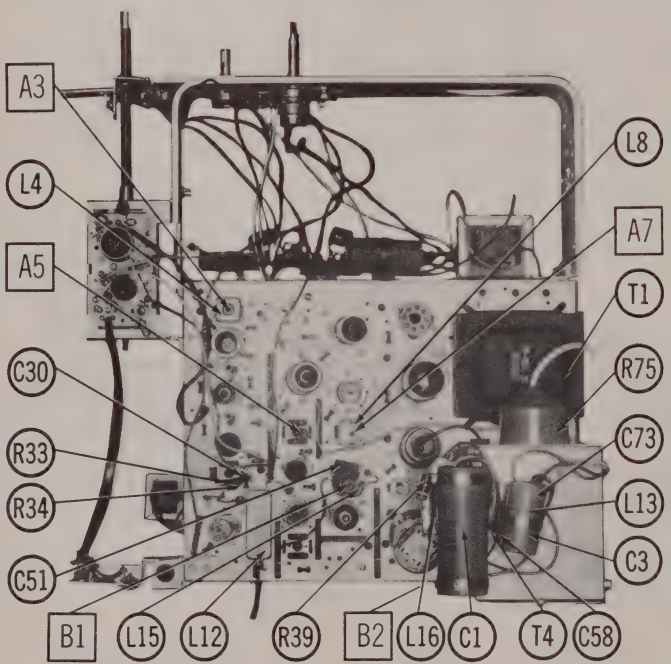
	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp.)	43.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru a demodulator probe to pin 5 (plate) of 1st Video IF Amp. Low side to chassis.	Mixer Plate Coil and A1	Connect a short across antenna terminals. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	44.5MC	"	Vert. Amp. to point Ⓑ . Low side to chassis.	A2	Adjust for maximum amplitude.
3.	"	"	43.25MC 45.75MC	"	"	A3, A4	Turn both cores out. Turn A3 in for maximum amplitude. Adjust A4 for response similar to Fig. 2. If necessary, retouch A2 and A3 to obtain desired response.

SOUND IF ALIGNMENT

Turn the set on and tune in a strong TV signal. Adjust the Sound Clarifier (Quad. Coil Slug) for maximum volume. Disconnect the antenna to provide a weak signal. If this does not provide enough signal to be heard, it may be necessary to insert an attenuator in series with the antenna and connect to set. Adjust A5 and A6 for maximum volume. Connect antenna direct for a strong signal and retouch the Sound Clarifier for maximum undistorted sound.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A7 for MINIMUM beat interference.



TV CHASSIS—TOP VIEW

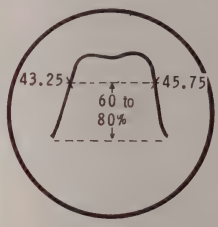


FIG. 1

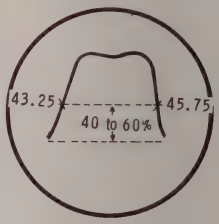
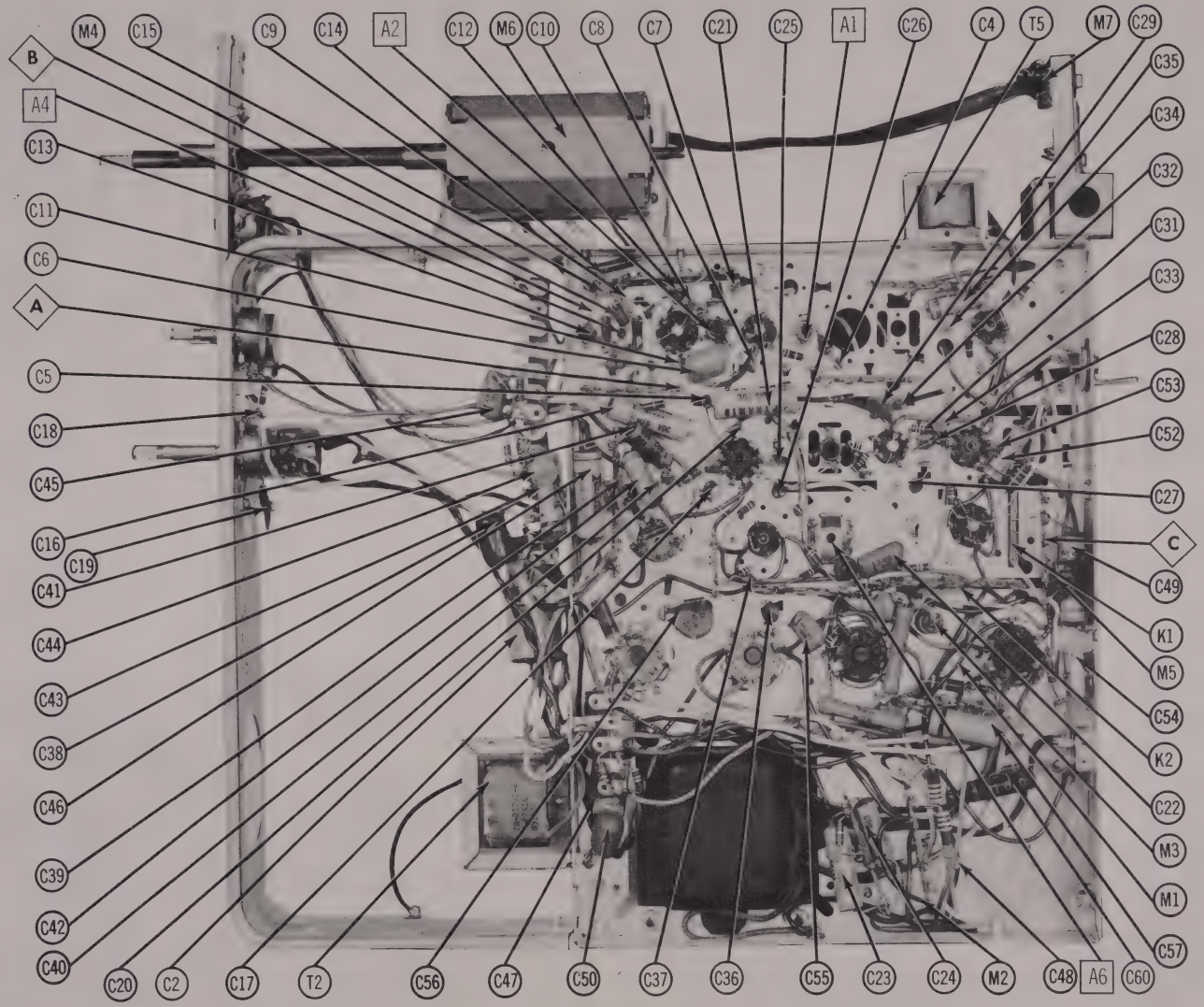
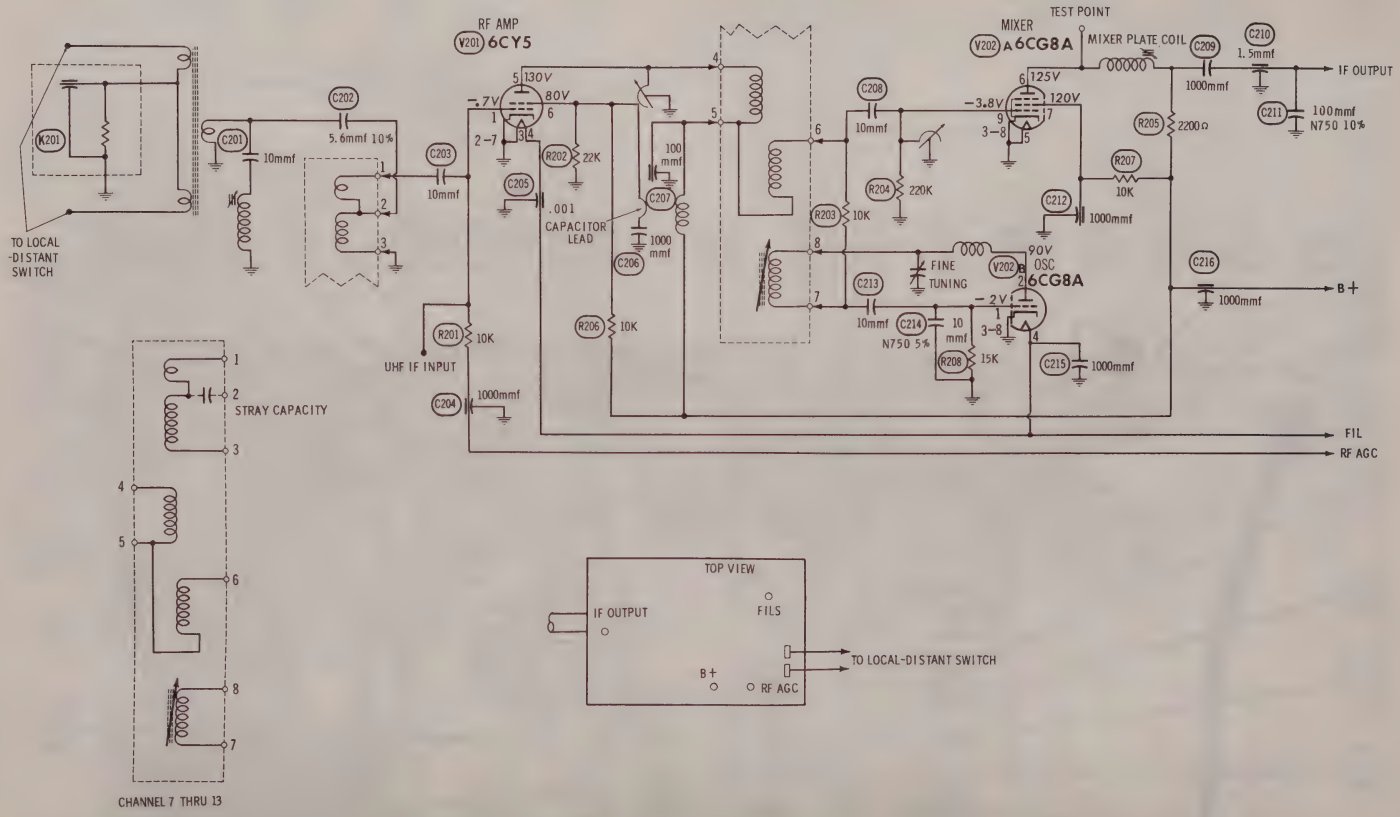


FIG. 2



TV CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR, TRANSFORMER & MISC. IDENT.

SET 551 FOLDER 1



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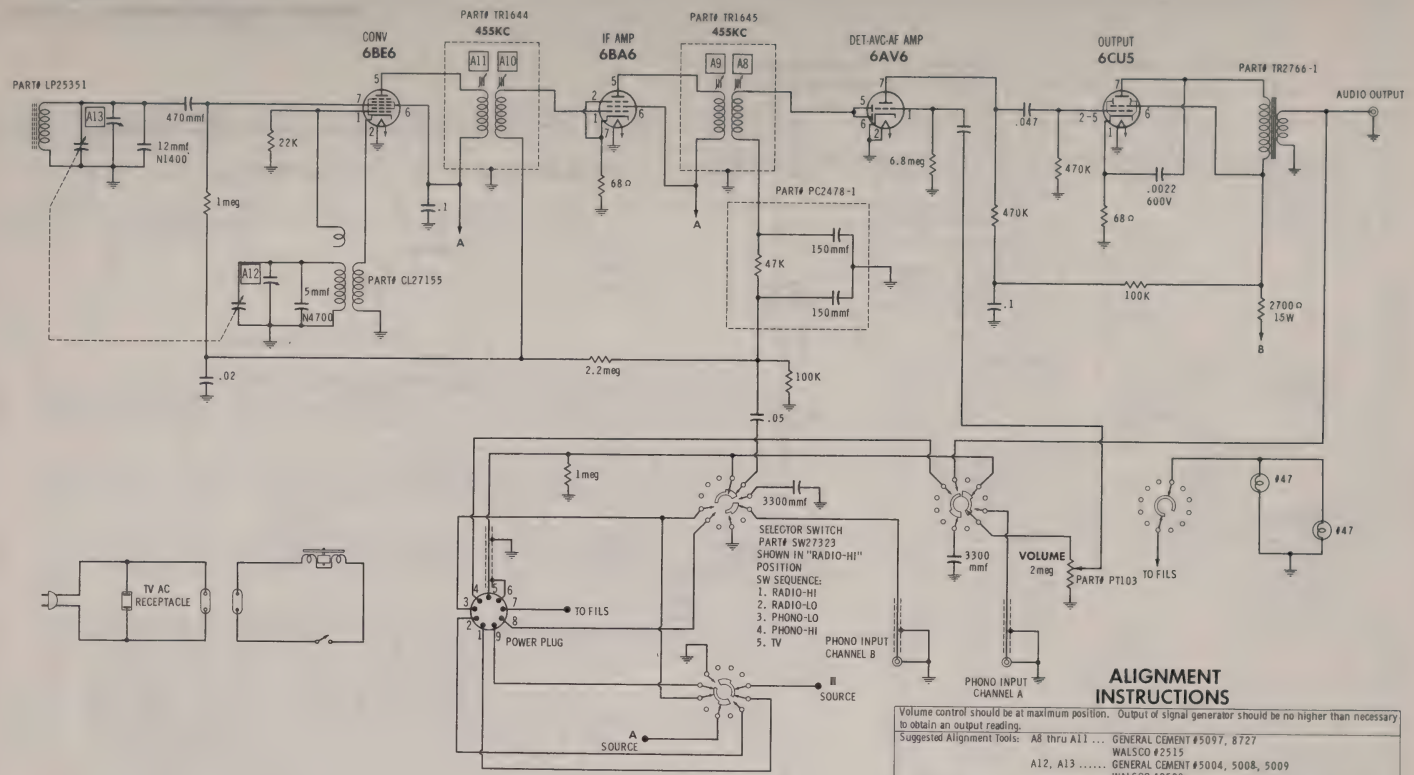
VHF TUNER CL26194



ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A8 thru A11 ... GENERAL CEMENT #5097, 8727
WALSCO #2515
A12, A13 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400 Mod.)	Tuning gang fully open	Across voice coil	A8, A9, A10 A11	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500KC	1500KC	"	A12	Adjust for maximum output.
3.	"	1500KC	1500KC Signal	"	A13	Adjust for maximum output.

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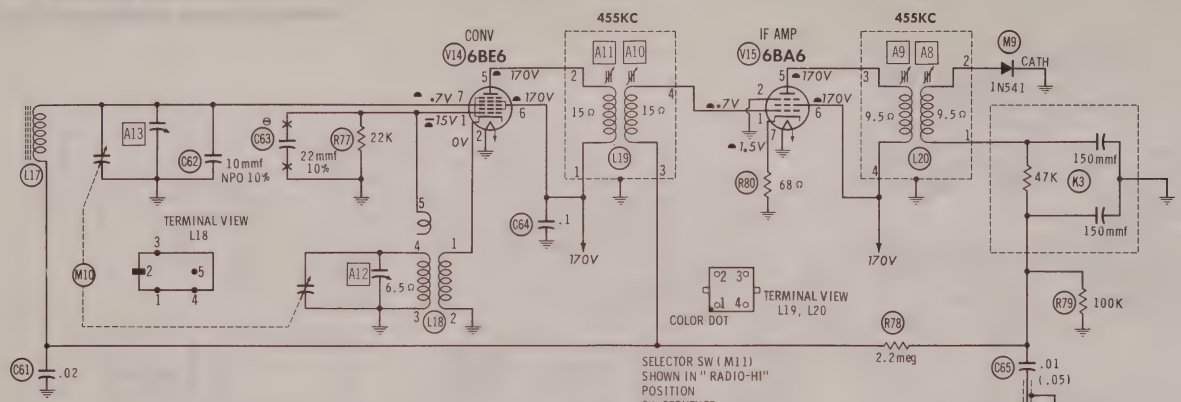
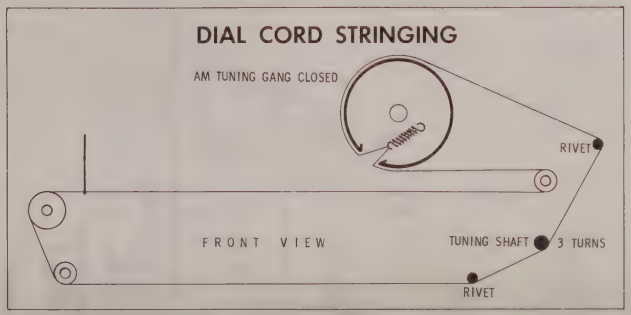
AM TUNER 162

OLYMPIC CHASSIS
KA, KAU, 129, 162





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V14	6BE6	22K	.1Ω	FIL	FIL	▪▲15Ω	▪▲0Ω	2.3meg		
V15	6BA6	2.3meg	0Ω	FIL	FIL	▪▲10Ω	▪▲0Ω	68Ω		

ALL MEASUREMENTS MADE IN "TV" POSITION UNLESS OTHERWISE DESIGNATED.

▪ MEASURED FROM PIN 1 OF V5 (AUDIO OUTPUT). ▲ MEASURED IN "RADIO" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TV PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V7	Vert. Mult. - Vert. Output	6CM7
V2	2nd Video IF Amp.	EF184/6EJ7	V8	Horiz. Mult.	6CG7
V3	Video Output - Sound IF Amp.	6AW8A	V9	Horiz. Output	6BQ6GT
V4	Audio Detector	6DT6A	V10	Damper	6AX4GTB
V5	Audio Output	6CU5	V11	HV Rectifier	1G3GT
V6	Sync Separator	6AV6	V12	LV Rectifier	5U4GB

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V13	21CBP4	21CBP4A/ CBP4B/CMP4 ①	21CBP4A ①		21CBP4/ 21CBP4A ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	60	350	CO-25794	PR4-450	BBRT0235	WT458		TVAS-3748 *	
B	60	350			BR6035				
C	60	200							
C2	10	450NP	CO-4022-3	PR1-200		TCN511		TVANS-1650*	
C3	50	250	CO-2068-3	PR51585	BR5025	TC59	TD-50-450	TVA-1512	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	.22	200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C7	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C8	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	2.2	±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C14	4.7	10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C15	4.7	10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C16	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C17	330			DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C18	220			DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C19	.02			BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C20	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C22	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C23	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C24	.02	400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C25	6.8	NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C26	330			DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C27	5	N750 10%			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C28	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	.05	50V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S50
C31	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C32	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C34	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	.0047	600V 10%		V84C6D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C36	.002			BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C37	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C38	.15	400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C39	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C40	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	.002	600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C42	.0047	600V 10%		V84C6D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C43	.035	600V 10%	#CO-C-6353K						6PS-S35
C44	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C46	.01	1600V		P1684CM-01	DD16-103	CUB16S1	16DP-3-103	GEM-1611	MB-S1
C47	.22	600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P10
C48	470	1000V 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C49	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C50	.1	600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C51	.0039	10%		1469-0039		1R5D39	CM-20B-392K	MCJ462.5	MS-239
C52	.001	600V 10%		V84C6D1-10%		PM6D1	6DP-1-102	GEM-1621	6TM-D10
C53	220		Note 1	DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C54	110-580		#CT3526				467		
C55	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C56	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C58	100	3000V 10%	#CO3781					3DY-310	
C59	68	3000V 10%	#CO4520					3DY-468	
C60	.01	600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10

Note 1. May not be used in some versions.

Olympic Part Number

SET 551 FOLDER 1

OLYMPIC CHASSIS KA, KAU, 129, 162

FOLDER 1

TV PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	PT25405	F1-7	RTV-670 †	QJ-963 †	UE3863-S ■	Contrast
B	1meg	½		R2-52				Volume
C	Switch			KR-1				Power Off-On
R2A	1meg	½	PT5702	B-69	A47-1meg-S	Q1-137	U54	Brightness
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R3A	2meg	½	PT26438	B-75	A47-2meg-S	Q1-139	U56	Vert. Hold
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R4A	1meg	½	PT26439	B-69	A47-1meg-S	Q1-137	U54	Horiz. Hold
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R5A	500K	½	PT25790	TT-59	B47-500K-S	B1-133	PTA55L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6	2.5meg	½	PT5008-1	TT-83	B47-2.5meg-S	HLC-3	TA255L	Height

† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B17-109, P13-116 (Panel) (Not available as a factory assembled unit). B13-137, R1-302 (Rear) Y6-1 (Switch)

■ "STA-LOC" Equivalent: FA152R, RU16A, OS500, IE2125, US-41.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	180Ω			
R8	180Ω			
R9	470Ω			
R10	470Ω			
R11	1000Ω			
R12	330Ω			
R13	47Ω			
R14	15K			
R15	330Ω			
R16	180Ω			
R17	1meg			
R18	5800Ω			
R19	1.5meg			
R20	1meg			
R21	1500Ω			
R22	4700Ω 4W	PW5-4700	5W-SQ-4700	
R23	33Ω			
R24	33K			
R25	150K			
R26	220K			
R27	22K			
R28	2700Ω			
R29	100K			
R30	22K			
R31	47K			
R32	270K			
R33	150K			
R34	560K			
R35	10K			
R36	1000Ω			
R37	1meg			
R38	1meg			
R39	390Ω 2W			
R40	2.2meg			
R41	470K			
R42	100K			
R43	82K			
R44	22K			
R45	82K			
R46	1.5meg			
R47	390K			
R48	1.5meg			
R49	1.5meg			
R50	12K			
R51	1meg			
R52	15K			
R53	150Ω			
R54	10meg			
R55	150K			
R56	100Ω			
R57	1000Ω 2W			
R58	560Ω			
R59	560Ω			
R60	330K 1W			
R61	330K 1W			
R62	6800Ω 1W			
R63	3300Ω			
R64	470K			
R65	820K			
R66	820Ω			
R67	22K			
R68	47Ω			
R69	8900Ω 4W	PW5-8900	5W-SQ-8900	
R70	47K 1W			
R71	100K			
R72	150K			
R73	15Ω			
R74	4700Ω			
R75	2.2Ω			
R76	470K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K1	Horiz. AFC & Mult. Grid	100mmf, 150mmf, .001mfd, .001mfd, .005mfd, 68K, 82K, 100K, 560K, 620K, 1meg, 1meg	PC25716	Centralab PC-367 Aerovox PA-724
K2	Horiz. Output Grid	680mmf, .001mfd, 820Ω, 82K, 470K	PC25714	Centralab PC-366 Aerovox PA-723

COILS (RF-IF)

ITEM No.	USE	OLYMPIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Peaking (36uh)	CL1535	TV-180	6178	RTC-8523	T301	
L2	1st Video IF	CL4753	TV-153	6226	RTC-8636	T218	
L3	2nd Video IF	CL4791	TV-130	6219	RTC-8551	T217	
L4	3rd Video IF	CL26953					
L5	RF Choke (1.7uh)	CK4225	BC-562	4604	RTC-8516	T856	
L6	Peaking (110uh)	CL26425	TV-194	6112	RTC-8574	T305	
L7	Peaking (160uh)	CL26426	TV-196	6120	RTC-8575	T308	
L8A	4.5MC Trap	TR3386-1					
B	1st Sound IF						
L9	Peaking (250uh)	CL3398 ①	TV-185 †	6181 †	RTC-8598 †	T315 †	① Wound on 15K Resistor. † Parallel with 15K Resistor.
L10	Peaking (500uh)	CL2614	TV-203	6174	RTC-8592	T324	
L11	2nd Sound IF	CL4021					
L12	Quadrature	CL31052	TV-124	1481	RTC-8606	T248	
L13	RF Choke (6.8uh)	CK4415	BC-565	4610	RTC-8520	T859	
L14	RF Choke (6.8uh)	CK4415	TC-565	4610	RTC-8520	T859	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	OLYMPIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L15	Horiz. Stabilizer	CL5464-1	TV-163	6210	RTC-8632	HS-5	WLC-25	T103	

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 ~	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
L16	.200A	60Ω	.7 Hy.	CK4047		C-2343 ①		C-36X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T1	117V ② 1.5A	540VCT @ .200A DC	5V ④ 3A	TR4007-2B ①	P-2867	P-8164	26R40	R-75BA	① Alternate Part #TR4007-2
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ④ 8A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T2	Vert. Output	TR25791-2	MDF-92 ①	DY-16 ①	Y-16 ①	A-141X	
T3	Yoke (Horiz. 18.4MH) (920) (Vert. 40MH) Rear Cover and Centering Device	CL3600-4				Y-41-3 YC-112	
T4	Horiz. Output	TR3599-5	HVO-131 * ③ ②	HO-315	FLY-143 ③	D-120 *	

① Connect same as original. Use original yoke damping network if necessary and rear cover with centering device.
② Drill new mounting hole(s). ③ Filament requires two turns.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
9	8	9	4	9
8	6	8	8	8
6	6	6	7	6
3	5	3	2	3
2	4	2	5	2
1	3	1	1	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T5	1500Ω	1.5-2Ω	TR-2786-1-C①					① Alternate Part #TR-2768-1.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	SK26452	5AUR	① May be used in some versions.
SP2	3½"	PM	3-4Ω	SK28020	3A07	
	5"			SK28452-1 ①		

FUSES

ITEM No.	TYPE	RATING	OLYMPIC PART No. FUSE	OLYMPIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3½" length #26 wire							
M2	3½" length #26 wire							
M3	C	1A 250V	FU26203		332.500 (C 1A 250V)	346002	C 1	HC 3/10 to 1/2

SIGNAL DIODES

ITEM No.	OBSG. TYPE	OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M4	1N64 †	1N64 † 1N60 * RF5465 ▲	6GC1 ▲	1N64 † 1N60 *	† Video Detector * Alternate ▲ AFC, Dual Selenium, Common Cathode Type
M5	▲				

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M6	Tuner	CL26194	VHF, STANDARD COIL REPLACEMENT #GG4220/A
M7	Tuner	CL26405	VHF-UHF
	Switch	SW2956-1	Local-Distance (DPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. CA235	CA235U	KA260	KA260U	KA261	KA261U	TA230	TA230U
Mask-Green	PP-3646-1	X	X					X	X
Mask-Gold	PP-3646-2			X	X	X	X		
Safety Glass-Clear	PP-3656	X	X	X	X			X	X
Safety Glass-Grey	PP-3656-1					X	X		
Knob-VHF Channel Selector	KN28042	X	X	X	X	X	X	X	X
Knob-UHF Channel Selector	KN28046		X		X		X		X
Knob-Calibrated Dial	KN26269				X		X		
Knob-Fine Tuning	KN27270				X		X		
Knob-Fine Tuning	KN26491			X		X			
Knob-Contrast	KN28059	X	X	X	X	X	X	X	X
Knob-Brightness	KN27315			X	X	X	X		
Knob-Brightness	KN28060	X	X					X	X
Knob-Volume	KN28074	X	X					X	X
Knob-Volume	KN27313			X	X	X	X		
Knob-Volume, Channel "A"	KN27275					X	X		
Knob-Vertical Hold	KN28043			X	X	X	X		
Knob-Horizontal Hold	KN28044			X	X	X	X		
Knob-Horiz., Vert. Hold	KN28045	X	X					X	X
Knob-AM-Phono-TV Selector	KN26488			X	X	X	X		
Cabinet	CA28115			X	X				
Cabinet	CA28116					X	X		
Cabinet	CA28113							X	X
Cabinet	CA28114	X	X						

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

OLYMPIC CHASSIS KA, KAU, 129, 162

FOLDER 1

AM TUNER 129 PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			RAYTHEON •	SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V14	AM Converter	6BE6	V15	AM IF Amplifier	6BA6

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C61	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-611	4TM-S20
C62	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C63	22 10%	Note 1	1469-000022	TCZ-10	22R5Q22	CM-19B-220K	CNO-422	MS-422
C64	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C65	.01	(.05) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C66	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

Note 1. May not be used in some versions.

† Alternate Value

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R77	22K			
R78	2.2meg			
R79	100K			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R80	68Ω			
R81	68K 4W	PW4-68K	5W-SQ-68K	
R82	1meg			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K3	AM Diode Filter	150mmf, 150mmf, 47K	PC2478	Aerovox PA-98 Centralab PC-51 Sprague D-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L17	Loopstick	LP25937	BC-419	705-A		T532	
L18	Osc.	CL2709	BC-393	69-OSC	RTC-8646	T504	
L19	Input IF	TR1644	BC-352	12-C1	RTC-8632	T607	
L20	Output IF	TR1645	BC-353	12-C2	RTC-8633	T608	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

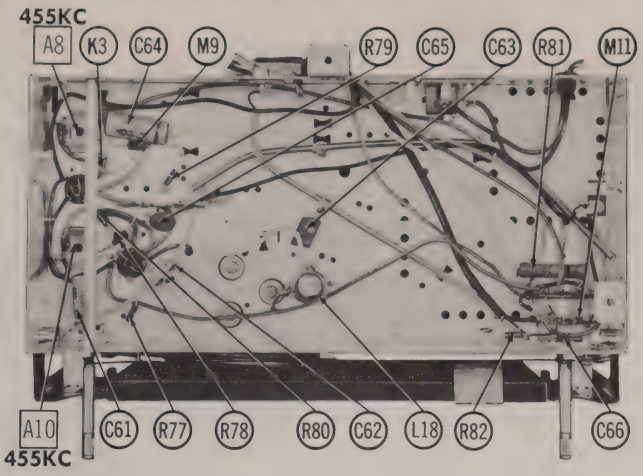
ITEM No.	REPLACEMENT DATA								NOTES
	OLYMPIC PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M8			76TS	N8-7 * N8-3 * (78RPM)	26S	2604 * 2605 * (78RPM)	8TA4-S	N-8TA-S *	

SIGNAL DIODES

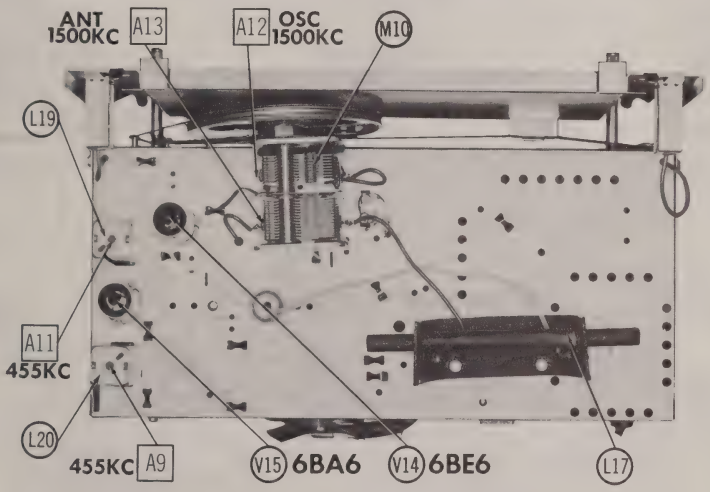
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M9	1N541	1N541		1N295	AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M10	Tuning Cap.	CV2681	2 Gang (Ant. 24-447mmf, Osc. 30-195mmf)
M11	Switch	SW25921	Function Selector, Rotary Wafer Type



AM TUNER 129—BOTTOM VIEW



AM TUNER 129—TOP VIEW

AM TUNER 129 ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A8 thru A11 ... GENERAL CEMENT #5097, 8727
WALSCO #2515
A12, A13 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A8, A9 A10, A11	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500KC	1500KC	"	A12	Adjust for maximum output.
3.	"	1500KC	1500KC Signal	"	A13	Adjust for maximum output.

VHF PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •		• SYLVANIA •
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C202	5.6 10%							10TCC-V56
C203	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C204	.001		EF-001	MFT-1000		CCF-102	CT280A	
C205	.001		EF-001	MFT-1000		CCF-102	CT280A	
C206	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C207	.001		EF-001	MFT-1000		CCF-102	CT280A	
C208	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C209	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C210	1.5							
C211	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C212	.001		EF-001	MFT-1000		CCF-102	CT280A	
C213	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C214	10 N750 5%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C215	.001		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	10K				R205	2200Ω			
R202	22K				R206	10K			
R203	10K				R207	10K			
R204	220K				R208	15K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K201	Antenna Filter			

VHF TUNER ALIGNMENT INSTRUCTIONS

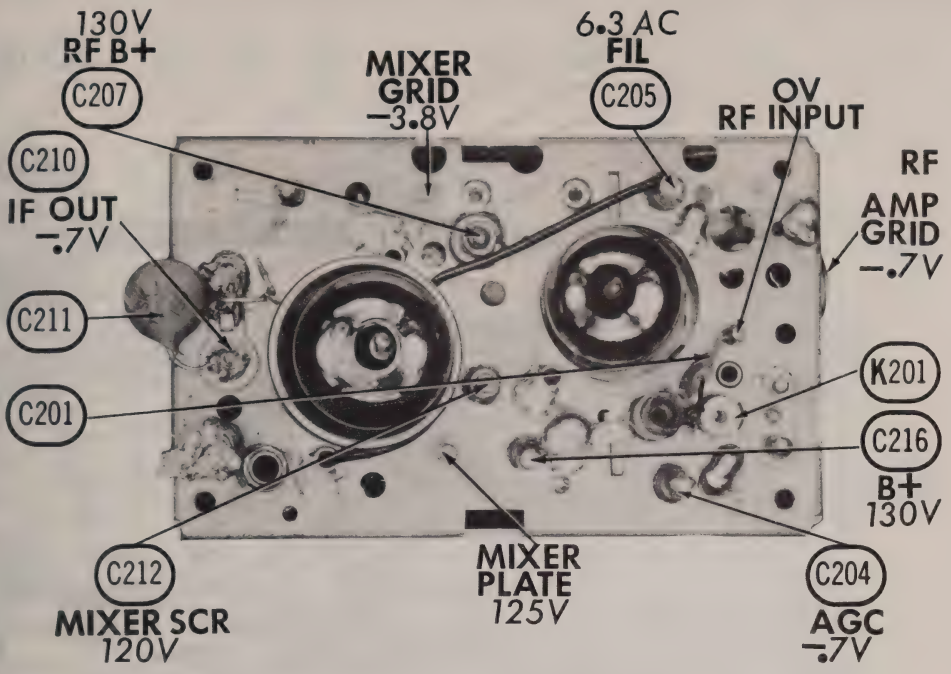
Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

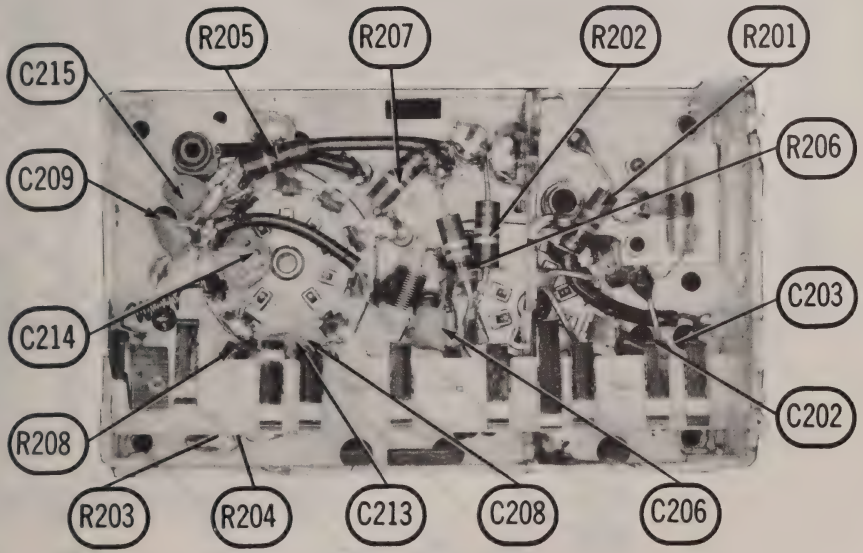
The individual channel adjustment screws are accessible one at a time thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to the channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

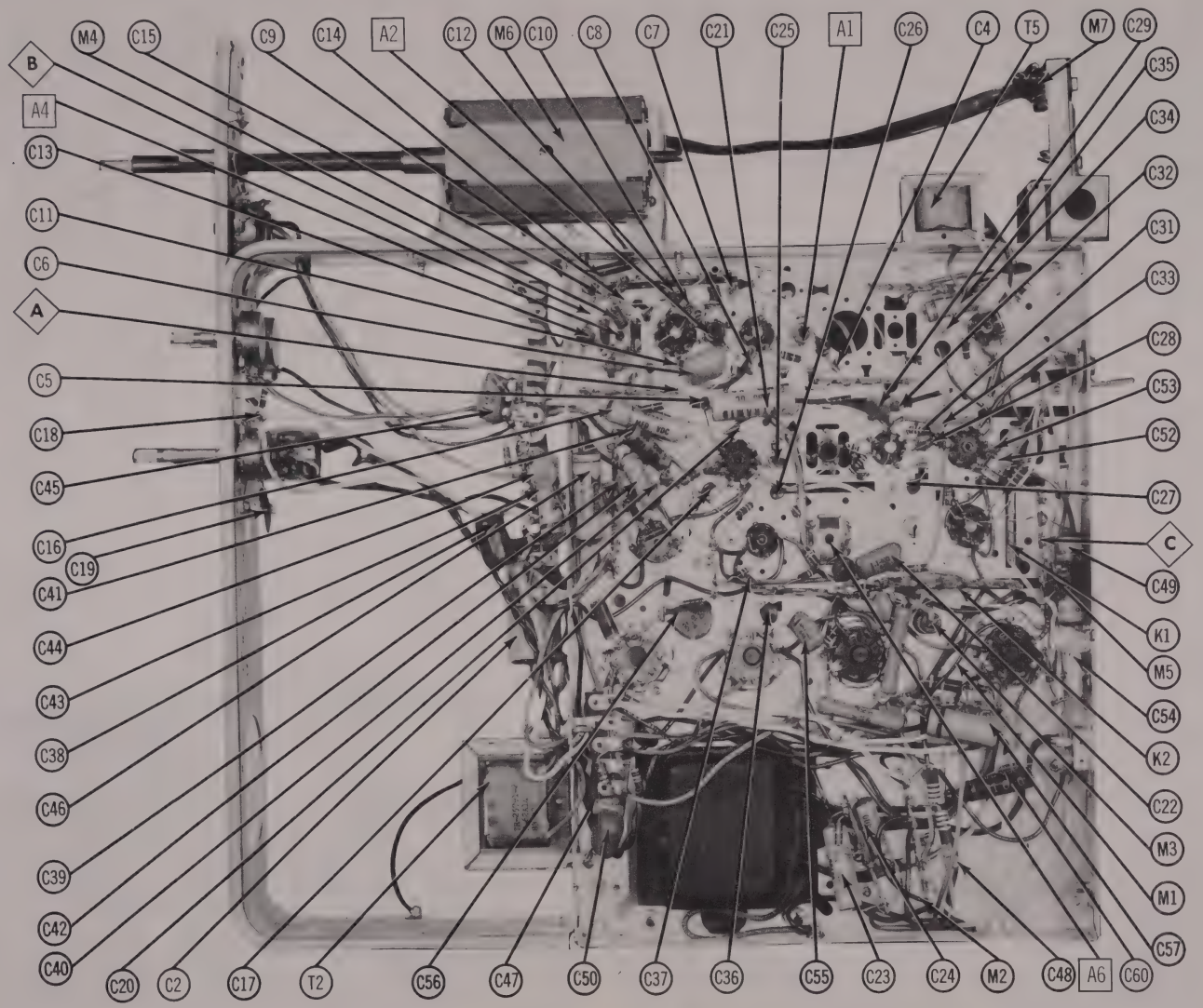
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



VHF TUNER CL26194 - TOP VIEW

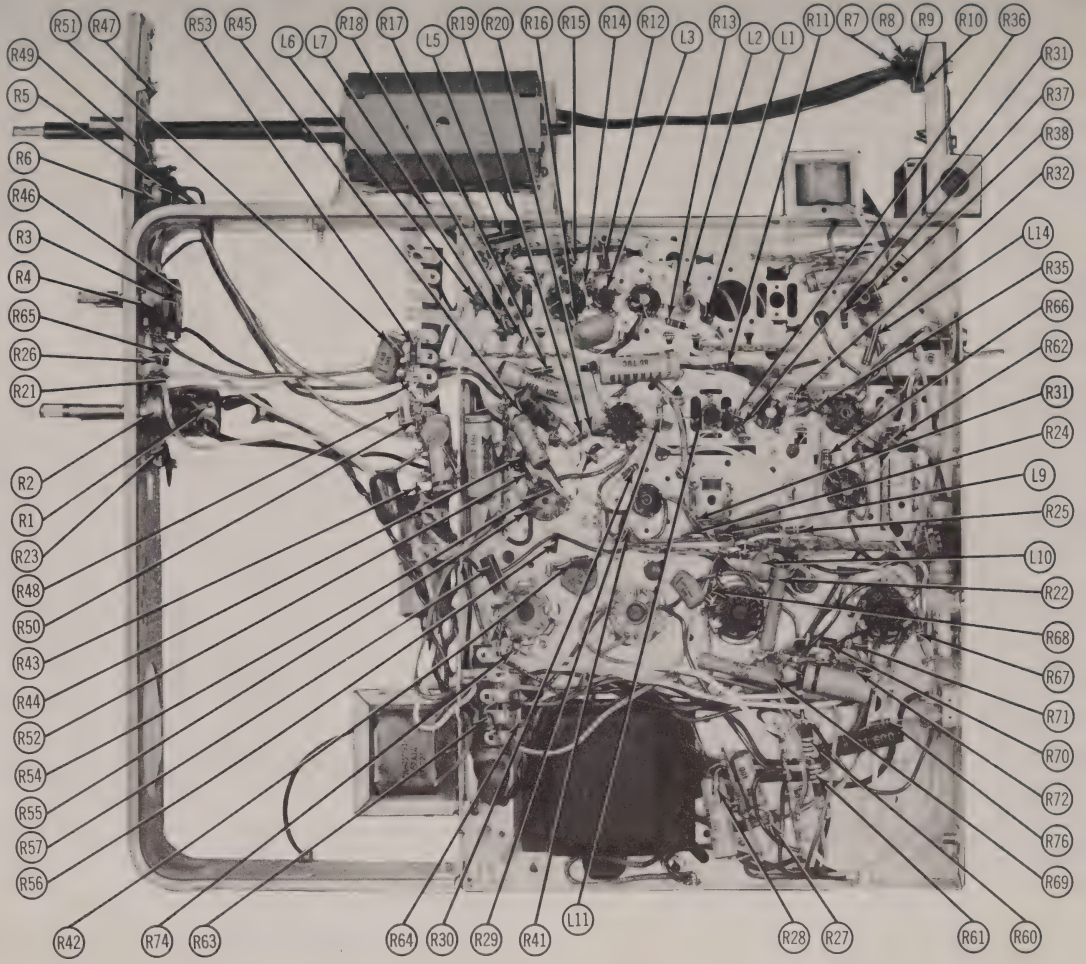


VHF TUNER CL26194 - BOTTOM VIEW



TV CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR, TRANSFORMER & MISC. IDENT.

SET 551 FOLDER 1



TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1meg	47Ω	FIL	FIL	▪330Ω	▪330Ω	0Ω		
V2	EF184/ 6EJ7	180Ω	.1Ω	180Ω	FIL	FIL	0Ω	▪330Ω	▪330Ω	0Ω
V3	6AW8A	0Ω	100K	▪22K ▪▵ INF	FIL	FIL	●60Ω	600K	▪0Ω ▪▵ INF	†4700Ω
V4	6DT6A	3Ω	1000Ω	FIL	FIL	†270K	▪10K	560K ▪1.5meg		
V5	6CU5	¶ 30K	500K	FIL	FIL	500K	†450Ω	†590Ω		
V6	6AV6	2.7meg	0Ω	FIL	FIL	NC	NC	†100K		
V7	6CM7	†1700Ω	NC	15K	FIL	FIL	†●2.4meg	● 1.3meg	●1.5meg	100Ω
V8	6CG7	†10K	2.1meg	820Ω ▪▵820Ω	FIL	FIL	†82K	68K	820Ω ▪▵820Ω	0Ω
V9	6BQ6GT	TP	FIL	NC	†8900Ω	470K	TP	FIL	0Ω	TOP CAP †35Ω
V10	6AX4GTB	NC	NC	†120K	NC	†60Ω	NC	FIL	FIL	
V11	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †735Ω
V12	5U4GB	NC	¶	TP	40Ω	NC	38Ω	TP	¶	
V13	21CBP4	FIL	22K	Pin 6 †70K	Pin 10 †70K	Pin 11 ●300K	Pin 12 FIL			
V201	6CY5	1meg	0Ω	FIL	FIL	▪0Ω	▪10K	0Ω		
V202	6CG8A	15K	▪10K	0Ω	FIL	FIL	▪2200Ω	▪10K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

ALL MEASUREMENTS MADE IN "TV" POSITION UNLESS OTHERWISE DESIGNATED.

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM PIN 8 OF V12.

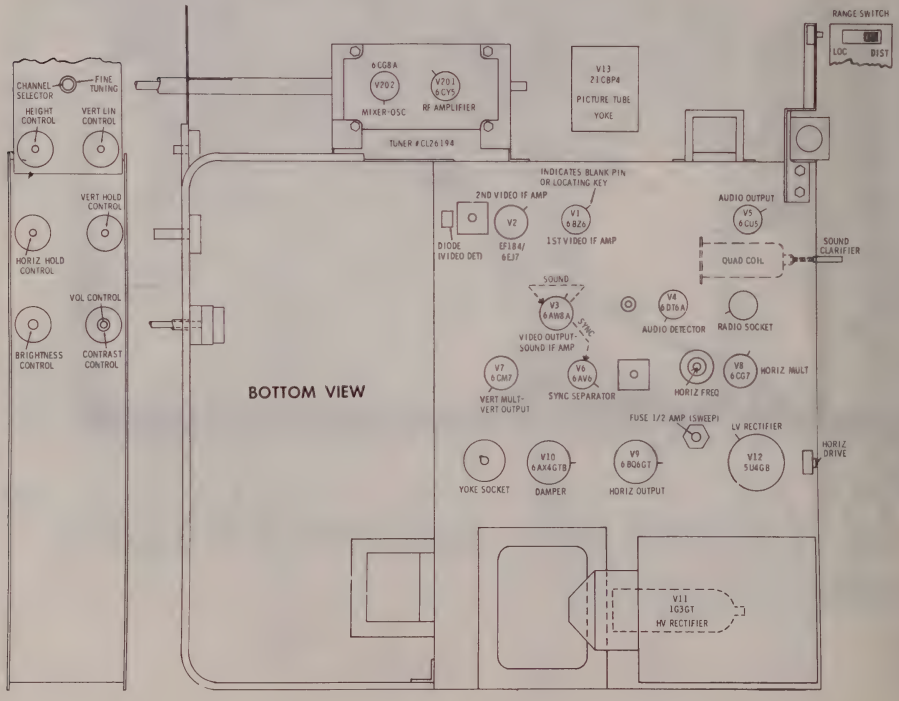
‡ MEASURED FROM PIN 3 OF V10.

NC NO CONNECTION

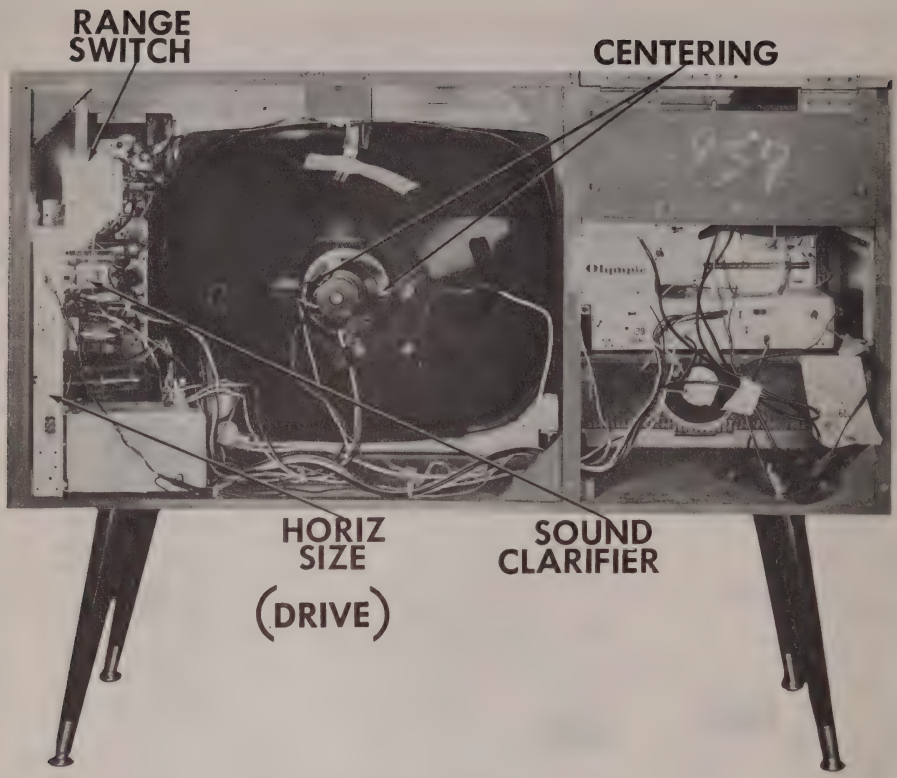
▪ MEASURED FROM PIN 1 OF V5.

▪▵ MEASURED IN "RADIO" POSITION.

TP TIE POINT



TV TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow it to warm up for 2 minutes. Tune in a TV station, preferably with a test pattern.

Connect a clip lead from point ◇ to chassis. Connect another clip lead across the Horizontal Stabilizing Coil (L15).

Adjust the Horizontal Hold until the picture synchronizes horizontally. (It may float back and forth.)

Remove the clip lead from L15. Adjust the Horizontal Frequency Slug (B1) until the picture is again in frequency. Remove clip lead from point ◇ and chassis. Turn Horizontal Drive Trimmer (B2) counterclockwise until a vertical white line (drive line) appears near the center of the screen, then turn clockwise until line just disappears. If drive line cannot be obtained, adjust B2 for proper width.

If B2 is adjusted, recheck adjustment of B1 and Horizontal Hold.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

1. Remove 2 screws in rear cover. Remove rear cover.
2. Remove 5 push-on type knobs on front.
3. Remove 1 screw holding front face-plate and remove 2 push-on type knobs.
4. Remove 1 screw holding front bracket and 3 chassis bolts.
5. Remove speaker leads, plug from radio, yoke plug, hi voltage lead, and picture tube socket.
6. Pull chassis straight out.

AM TUNER REMOVAL

1. Remove 5 screws holding rear cover.
2. Remove 2 push-on type knobs on front of tuner.
3. Remove 3 chassis bolts.
4. Remove phono plug and motor plug.
5. Pull tuner out rear.

PICTURE TUBE REMOVAL

It is necessary to remove the TV chassis for picture tube removal.

PHOTOFACT® Folder

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

MODEL G2216L

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

MODEL G2216L

TRADE NAME	ZENITH	MODELS	TV Chassis	Remote Control Receiver
		F2105C, F2110G, F2111L, F2111P	16F27 or 16G27	
		F2112W	16F27T or 16G27T	
		F2105CU, F2110GU, F2111LU, F2111PU	16F27U or 16G27U	
		F2112WU	16F27TU or 16G27TU	
		F2214L, F2215J, F2215L, F2230E, F2230M, F2230R, F2230W	16F27Q	S-48583
		G2105C, G2105L, G2110B, G2110G	16G27	
		G2105CU, G2105LU, G2110BU, G2110GU	16G27U	
		G2112J, G2112W	16G27T	
		G2112JU, G2112WU	16G27TU	
		G2214L, G2215J, G2215L	16G27Q	S-48583 or S-52223
		G2216L	16G27QT	S-48583 or S-52223

MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois
TUBES	TV: VHF - Sixteen, UHF - Seventeen Remote Control Receiver: Six
POWER SUPPLY	110-120 Volts AC, 60 Cycle
RATING	TV: 190 Watts, 1.75 Amp. @ 117 Volts AC Remote Control Receiver: 34 Watts, .34 Amp. @ 117 Volts AC TV & Remote Control Receiver: 250 Watts, 2.45 Amp. @ 117 Volts AC (While Tuning)
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Carefully pry off picture tube mask (start at two bottom slots). Remove 4 screws (now visible) holding safety glass.

FUSE

TV: A Line fuse, LV supply fuse, and fuse wire (F11.) used for receiver protection. For fuse location, see "Tube Placement Chart". For fuse wire location, see M3 in photo, page 5.

Remote Control Receiver: A 3/4 Amp. fuse used for receiver protection. (See "Top View" photo for location of M11.)

TUNER OSCILLATOR ADJUSTMENT (TUNER #175-302)

The Oscillator slug is adjusted by turning Fine Tuning.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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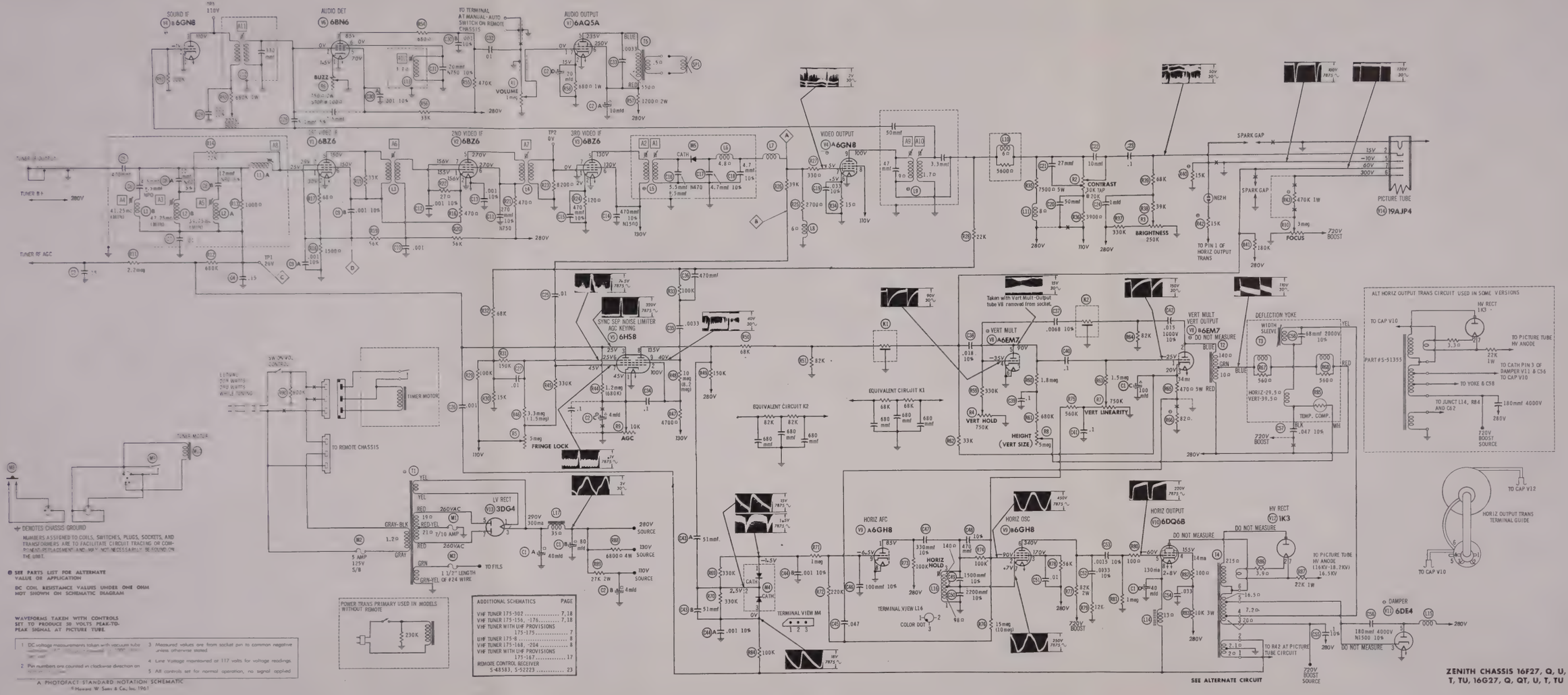
LA048


SOUND IF V4 6GN8
AUDIO DET V6 6BN6
TO TERMINAL AT MANUAL-AUTO SWITCH ON REMOTE CHASSIS
AUDIO OUTPUT V7 6AQ5A
VOLUME
TUNER B+
TUNER RF AGC
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6BZ6
VIDEO OUTPUT V6 A6GN8
CONTRAST
BRIGHTNESS 250K
SPARK GAP
PICTURE TUBE V14 19AJP4
FOCUS
SYNC SEP NOISE LIMITER AGC KEYING V5 6HS8
FRINGE LOCK
AGC
TIMER MOTOR
TO REMOTE CHASSIS
EQUIVALENT CIRCUIT K2
EQUIVALENT CIRCUIT K1
VERT MULT V8 A6EM7
VERT MULT VERT OUTPUT V8 B6EM7
DO NOT MEASURE
Taken with Vert Mult Output tube V8 removed from socket.
VERT HOLD 750K
VERT LINEARITY
HEIGHT (VERT SIZE) 5meg
DEFLECTION YOKE
WIDTH SLEEVE
HORIZ-29.5 VERT-39.5Ω
TEMP. COMP.
720V BOOST
ALT HORIZ OUTPUT TRANS CIRCUIT USED IN SOME VERSIONS
HV RECT 1K3
TO PICTURE TUBE HV ANODE
TO CATH PIN 3 OF DAMPER V11 & C56
TO CAP V10
TO YOKE & C58
TO JUNCT L14, R84 AND C62
720V BOOST SOURCE
PART #S-51355
LV RECT V13 3DG4
260VAC
7/10 AMP
TO FILS
1 1/2" LENGTH GRN-YEL OF #24 WIRE
5 AMP 125V S/B
1.2Ω
GRAY-BLK
GRAY
RED
GRN
YEL
RED-YEL
280V SOURCE
130V SOURCE
110V SOURCE
6800Ω 4W
27K 2W
HORIZ AFC V9 A6GH8
HORIZ OSC V9 B6GH8
HORIZ OUTPUT V10 6DQ68
HORIZ HOLD
TERMINAL V/EW M4
TERMINAL V/EW L16
COLOR DOT
HV RECT V12 1K3
TO PICTURE TUBE HV ANODE (16KV-18.2KV) 16.5KV
22K 1W
TO R42 AT PICTURE TUBE CIRCUIT
720V BOOST SOURCE
SEE ALTERNATE CIRCUIT
DAMPER V11 6DE4
180mmf 4000V N1500 10%
HORIZ OUTPUT TRANS TERMINAL GUIDE
TO CAP V12
TO CAP V10
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube
2 Pin numbers are counted in clockwise direction on
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, no signal applied
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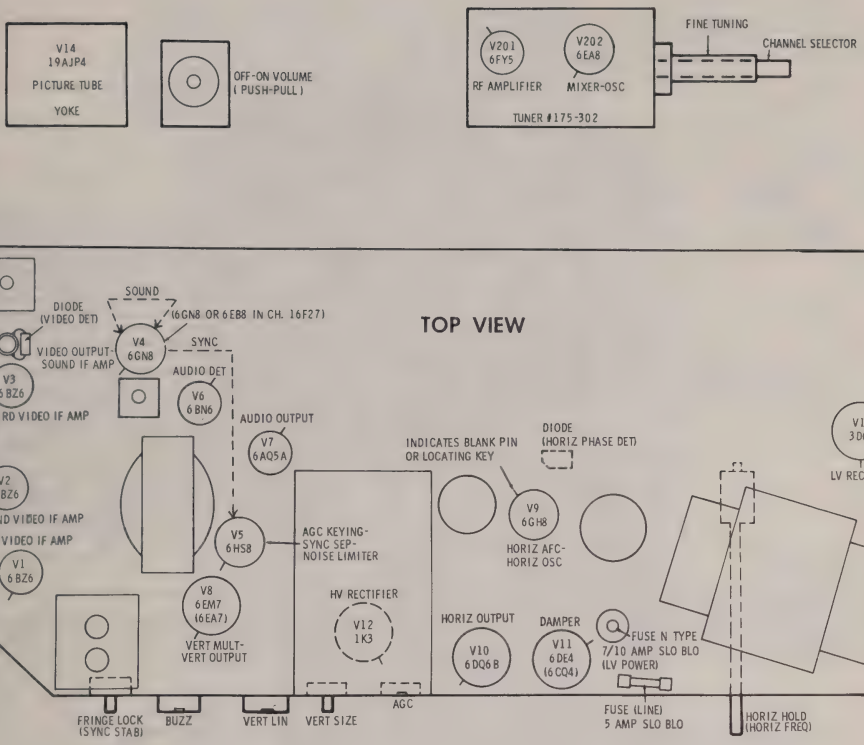
POWER TRANS PRIMARY USED IN MODELS WITHOUT REMOTE
230K
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 175-302 ..... 7, 18
VHF TUNER 175-156, -176 ..... 7, 18
VHF TUNER WITH UHF PROVISIONS 175-175 7
UHF TUNER 175-8 8
VHF TUNER 175-168, -204 8
VHF TUNER WITH UHF PROVISIONS 175-167 17
REMOTE CONTROL RECEIVER S-48583, S-52223 23
ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Fuse (LV Power), V13

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. Phase Det.), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS
TV

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470mmf	High side to TP-2. Low side to chassis.	44.0MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between two channels	Vert. Amp. thru 10K to point Ⓐ. Low side to chassis. (Across Video Detector load).	A1, A2	Set sweep output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, see that the cores are entering their respective windings from opposite ends.
2.	Direct	High side to ungrounded tube shield over Mixer-Osc. (V202). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5	Connect a clip lead from point Ⓑ to chassis. Connect a clip lead from point Ⓒ to point Ⓓ. Use high scope gain and adjust A3 thru A5 for MINIMUM amplitudes at markers as shown in Fig. 2. A3 controls 39.75MC, A4 controls 41.25MC and A5 controls 47.25MC.
3.	"	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A6, A7, A8, & Mixer Plate Coil	Disconnect the clip lead from point Ⓓ and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A6 affects the low frequency side and A7 affects the high frequency side.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver terminals.
Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound. Adjust A9, A10, A11 and A12 for maximum sound and best quality. Adjust the Buzz control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal until the hiss returns.

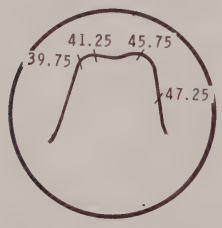


FIG. 1

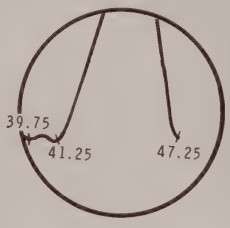


FIG. 2

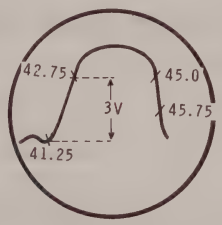
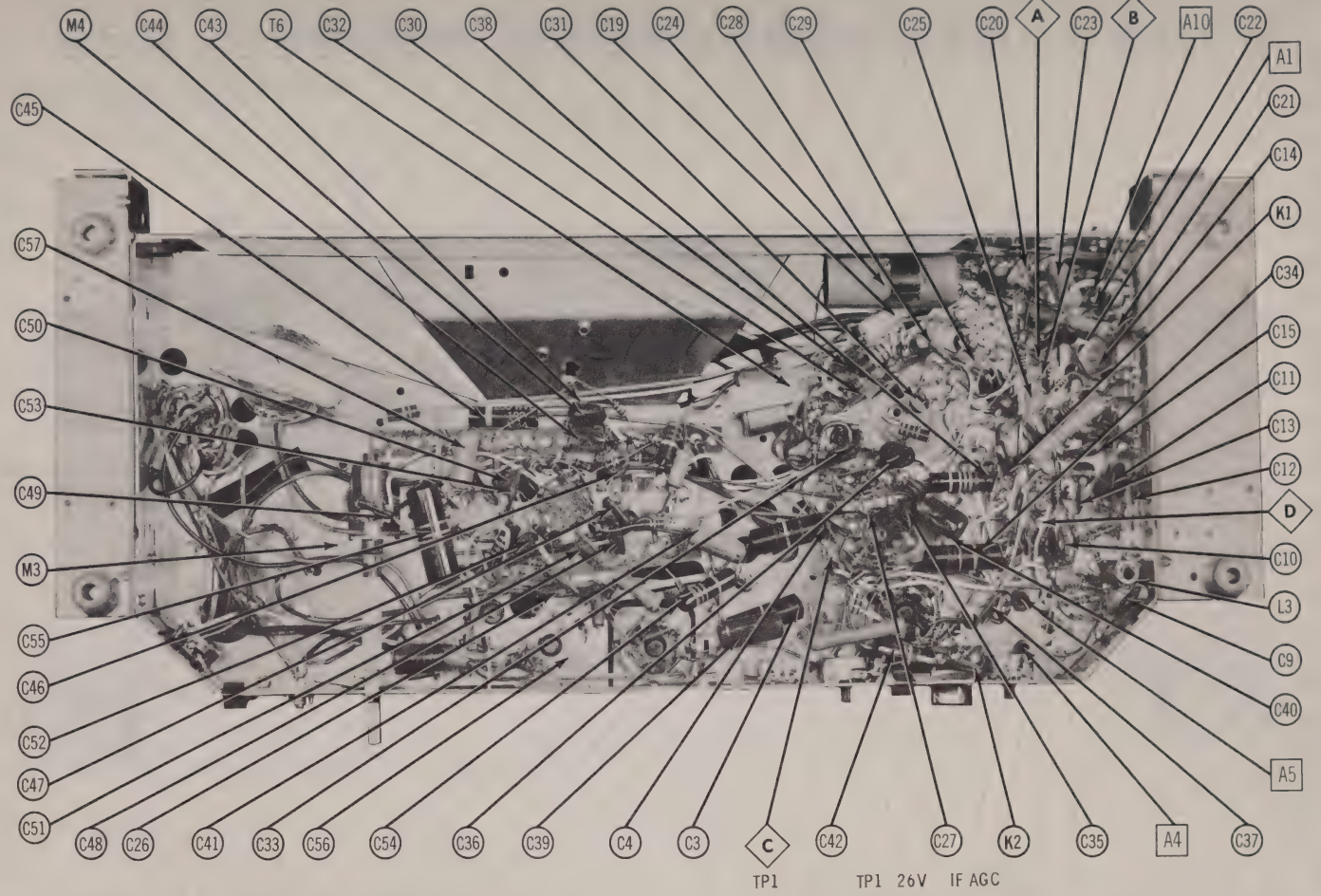


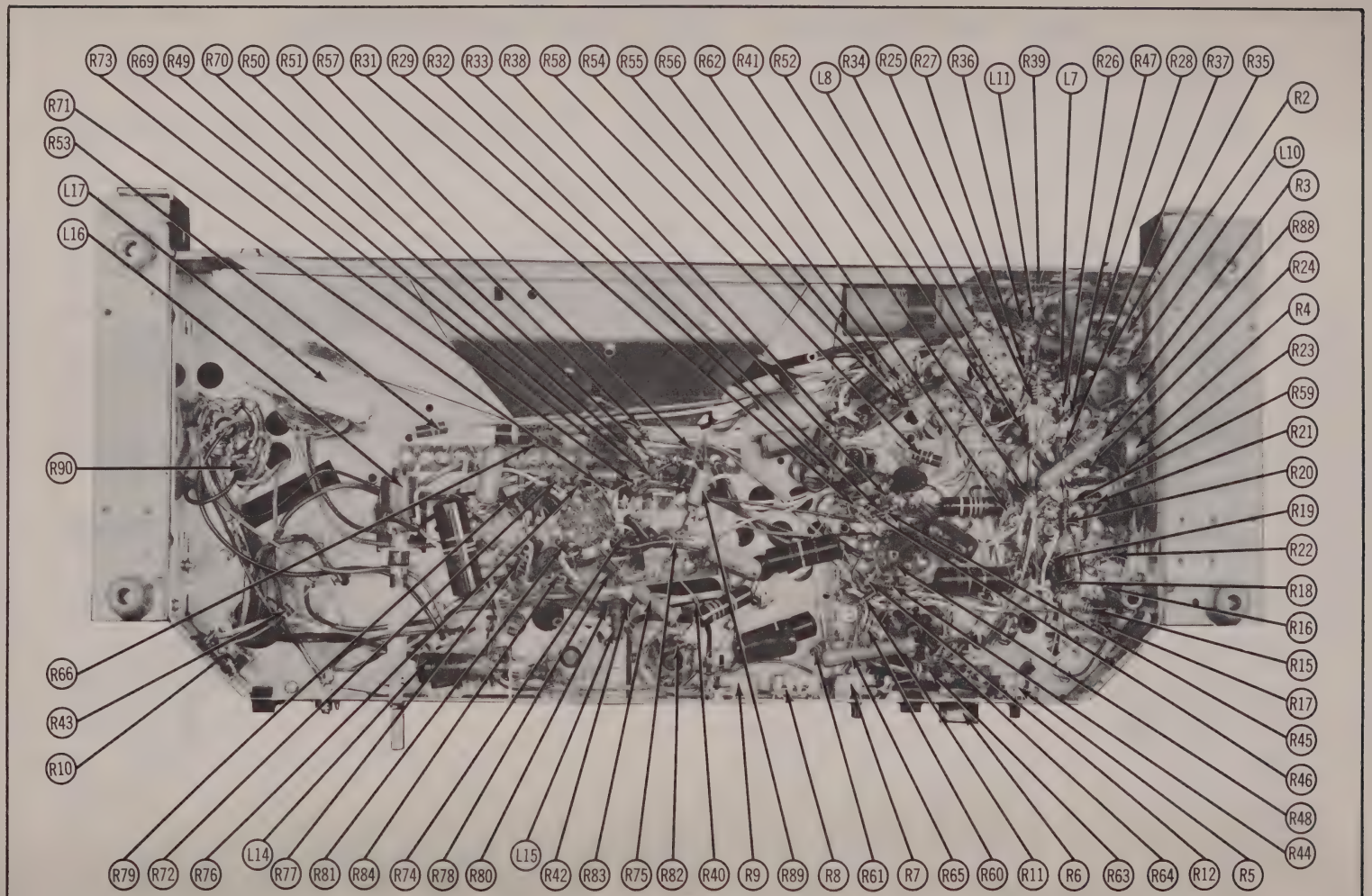
FIG. 3

ALIGNMENT INDENTIFICATION PHOTOS PAGES 5, 20.

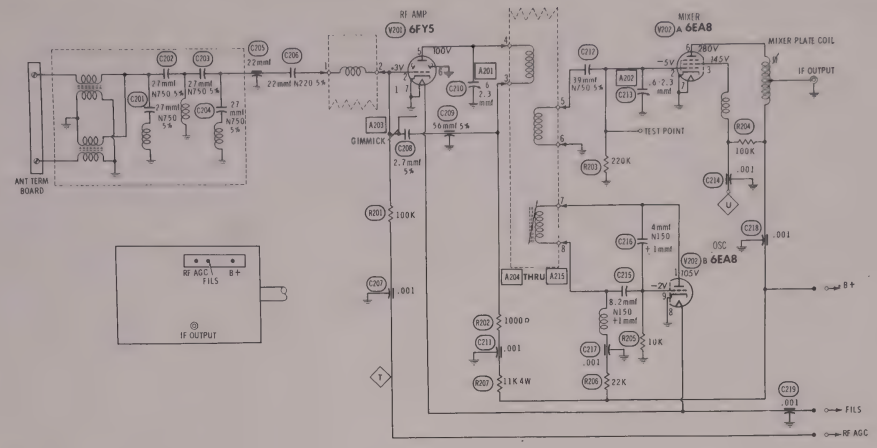


TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

ZENITH CHASSIS 16F27, Q, U,
T, TU, 16G27, Q, QT, U, T, TU



TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



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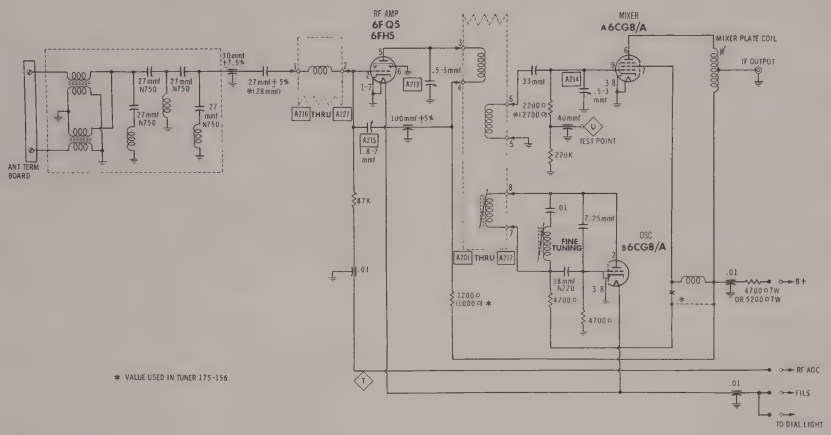
VHF TUNER 175-302



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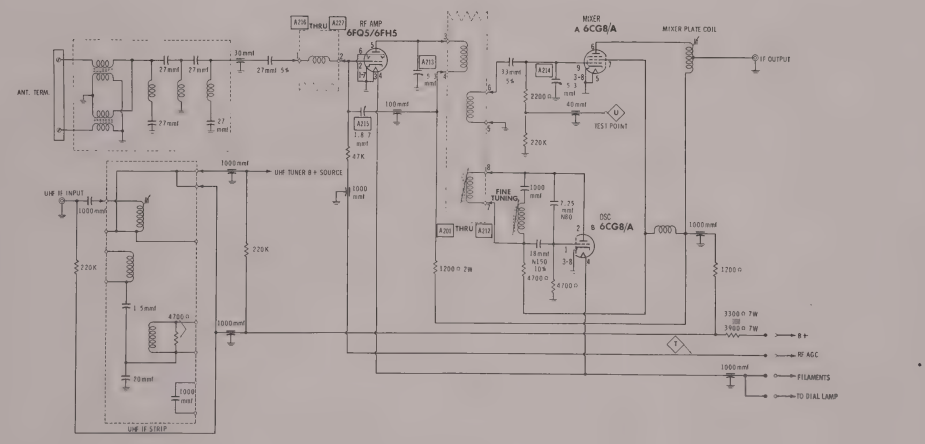
VHF TUNER 175-156, -176



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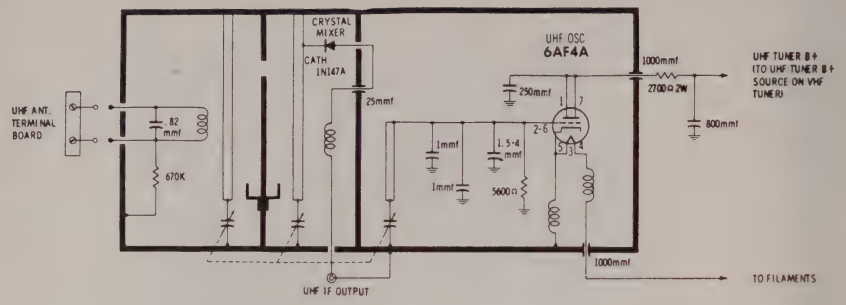
VHF TUNER WITH UHF PROVISIONS 175-175



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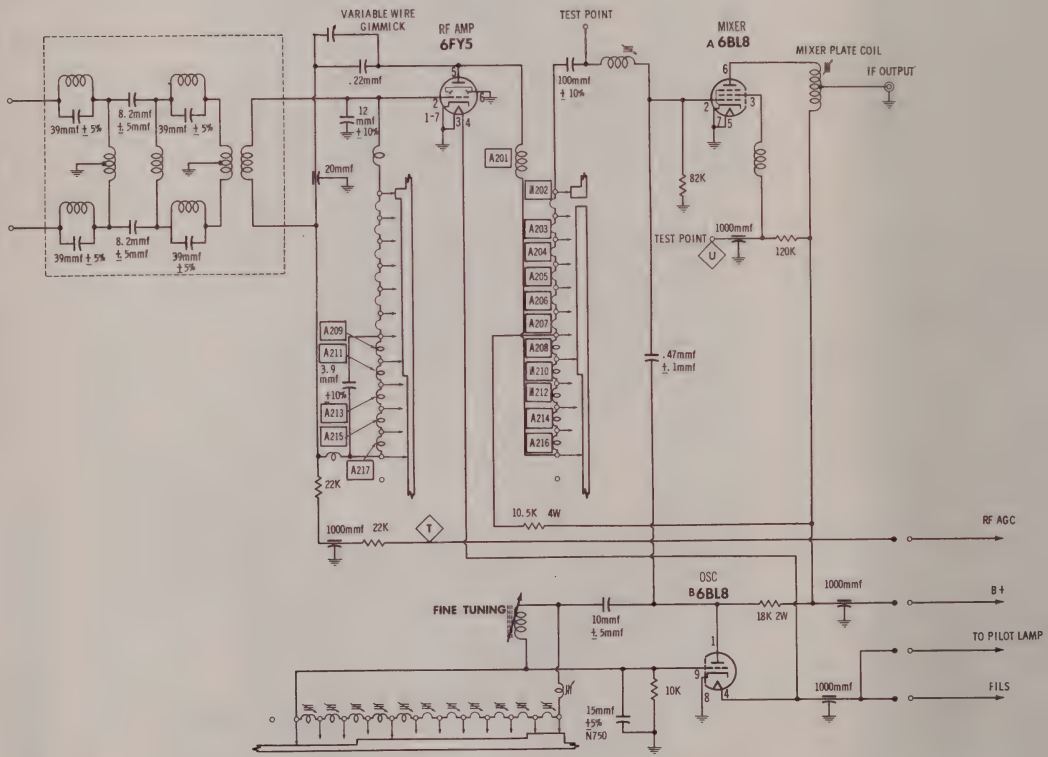
UHF TUNER 175-8



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VHF TUNER 175-168, -204

VHF TUNER ALIGNMENT INSTRUCTIONS

175-156, -175, -176

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

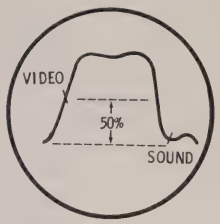


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

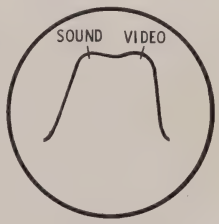


FIG. 202

VHF TUNER ALIGNMENT INSTRUCTIONS

175–302

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202 ..... GENERAL CEMENT #9050L, 9150
WALSCO #2521, 2524

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across VHF antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (D). Low side to chassis.	A201, A202	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	"	"	Vert. Amp. thru 10K across Video Detector load.	A203	Increase bias at point (T) to -20 volts. Adjust position of capacitor wire A203 for MINIMUM output as indicated on scope.
3.	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point (D). Low side to chassis.	A204	Reset bias at point (T) to -2.5 volts. Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Adjust by expanding or compressing coil turns.
4.	"	207MC	205.25MC 209.75MC	12	"	A205	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. Adjust by expanding or compressing coil turns.
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

VHF OSCILLATOR ALIGNMENT

The VHF Oscillator is adjusted by turning the Fine Tuning, which thru a gear mechanism, turns the Oscillator slug in each individual channel strip.

FIG. 201

VHF TUNER PARTS LIST AND DESCRIPTIONS

175—302

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FY5	V202	Mixer - Osc.	6EA8

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 5%			TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 5%			TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 5%			TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 5%			TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	22 5%	#22-3270				*		10TCR-Q22
C206	22 N220 5%	#22-3371				*		
C207	.001		EF-001	MFT-1000		CCF-102	CT280A	
C208	2.7 5%	#22-3405						10TCC-V27
C209	56 5%	#22-3488						
C210	.6-2.3			829-3		CV-1	CT565	
C211	.001		EF-001			CCF-102	CT280A	
C212	39 N750 5%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C213	.6-2.3			829-3		CV-1	CT565	
C214	.001		EF-001	MFT-1000		CCF-102	CT280A	
C215	8.2 N150 ±1mmf	#22-3369				*		10TCP-V82
C216	4 N150 ±1mmf	#22-3372				*		10TCP-V50
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	
C219	.001		EF-001	MFT-1000		CCF-102	CT280A	

Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	100K				R205	10K			
R202	1000Ω				R206	22K 2W			
R203	220K				R207	11K 4W	PW5-11K	4G-11K	
R204	100K								

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans.	S-49189	
L202	IF Trap	20-874	
L203	IF Trap	20-799	
L204	IF Trap	20-798	
L205A	Ant., RF, Mixer & Osc.	S-49202	Channel 2
B	"	S-49203	Channel 3
C	"	S-49204	Channel 4
D	"	S-49205	Channel 5
E	"	S-49206	Channel 6
F	"	S-49207	Channel 7

ITEM No.	USE	ZENITH PART No.	NOTES
L205G	Ant., RF, Mixer & Osc.	S-49208	Channel 8
H	"	S-49209	Channel 9
J	"	S-49210	Channel 10
K	"	S-49211	Channel 11
L	"	S-49213	Channel 12
M	"	S-49213	Channel 13
L206	RF Choke	S-49738	
L207	RF Choke	20-797	
L208	Mixer Plate	S-50720	

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6BZ6
V4	Video Output - Sound IF Amp.	6GN8 Note 1
V5	AGC Keying - Sync Sep. - Noise Limiter	6H8
V6	Audio Detector	6BN6
V7	Audio Output	6AQ6A
V8	Vert. Mult. - Vert. Output	6EM7 (6EA7) *
V9	Horiz. AFC - Horiz. Osc.	6GH8
V10	Horiz. Output	6DQ6B
V11	Damper	6DE4 (6CG4) *
V12	HV Rectifier	1B3
V13	LV Rectifier	3DG4

Note 1. Chassis 16F27 use 6EB8 or 6GN8 in this application. * Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	19AJP4		19AJP4 ①		19AJP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	≋40	400	23-3212	AFH4-100-40	D0478	FP454.8	TMQ-4346	TVL-4663.4	
B	≋80	400							
C	≋100	50							
D	60	25							
C2A	≋10	400	23-3457	AFH4-59	D0480	FP434.5	TMQ-4505	TVL-4652	Note 1
B	≋4	350							
C	≋4	150							
D	20	25							

Note 1. Chassis 16F27 use .01mfd ② 500V for C2C and 3 section Electrolytic for C2A, B, D (Pt. #22-3744).

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.15	200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C4	.15	200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C5	470			DI-470	DD-47I	BYA10T47	CCD-47I	B-347	10TS-T47
C6	4.5	NPO ± .5mmf		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V47
C7	.01			BPD-01	DD-103	BYA10S	CCD-103	B-110	5HK-S10
C8A	13	NPO	5%		TCZ-12	C10Q13C	CM-19B-130J	CNO-412	10TCC-Q12
B	13	NPO	5%		TCZ-12	C10Q13C	CM-19B-130J	CNO-412	10TCC-Q12
C9A	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
B	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C10	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C11	270	N750	10%		TCN-270	C10T27U	CCTN-270	CNT-327	10TCU-T27
C12	.001		10%	DI-1000	DD-103	5R5DI	CCD-103	GP210	10TS-D10
C13	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C14	470	N1500	10%	#22-3363			*		
C15	470		10%	DI-470	DD-47I	5R5T47	CCD-47I	GP347	10TS-T47
C16	5.5	N470 ± .5mmf	#22-3221				*		
C17	4.7		10%	NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C18	4.7		10%	NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C19	.033	200V	10%	V84C2S33-10%		PM6S33	4DP-2-333	GEM-1613	6TM-S33
C20	50			SI 50	D5-500	L10Q5	CCD-500	GP450	10TS-Q50
C21	27			SI 27	D6-270	L10Q2T	CCD-270	GP427	10TS-Q27
C22	10			SI 10	D6-10	L10Q1	CCD-100	GP410	10TS-Q10
C23	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C24	.1mfd	400V		P488N-1.0		ST4W1		GEM-41	4TM-P10
C25	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C27	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.001		10%	DI 1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C29	5.1		5%	NPO-SI 5.0		C10V5C	CCTO-050		10TCC-V50
C30A	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
B	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C31	20	N750	10%	N750-DI 20	DTN-20	C10Q2U	CCTN-220	CNT-420	10TCU-Q20
C32	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.0033			BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C34	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C35	.0033			BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C36	470			DI-470	DD-47I	BYA10T47	CCD-47I	B-347	10TS-T47
C37	.0068	200V	10%	V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C38	.018	400V	10%	P668CM-018		PM6S2	4DP-2-203	GEM-1612	6TM-S20
C39	.1	600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C40	.1	400V		P688N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C41	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C42	.015	1000V	10%			DPMS18S15	18DP-4-153		10TM-S15
C43A	SI			DI-50	DD-S10	L10Q5I	CCD-500	GP450	10TS-Q50
B	SI			DI-50	DD-S10	L10Q5I	CCD-500	GP450	10TS-Q50
C44A	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
B	.001		10%	DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C45	.047	200V		P288N-047	DD-503	CUB2S47	2DP-3-473	GEM-4147	2TM-S47
C46	100		10%	DI-100	DD-101	L10TI	CCD-101	GP310	10TS-T10
C47	330		10%	1469-00033		5R5T33	CM-19B-331K	MCB241	MS-333
C48	470		10%	1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C49	1500		10%	1464-0015		5R5DI5	CM-20B-152K	MCB456	MS-215
C50	2200		10%	1464-0022		1R5D22	CM-20B-222K	MCJ459	MS-222
C51	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	.0033		10%	DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C53	.0015		10%	DI-1500	DD-152	PM6DI5	CCD-152	GP-215	10TS-D15
C54	.033	400V		P488N-033	DD-303	CUB6S33	4DP-3-333	GEM-4133	6TM-S33
C55	.1	600V	10%	V84C6P1-10%		PM6DI	6DP-4-103	GEM-1001	6TM-P10
C56	180	4000V	N1500 10%						
C57	.047	600V	10%	V84C6S47-10%		PM6S47	6DP-3-473	GEM-1615	6TM-S47
C58	68	2000V	10%			HVA20G68	VCM-20-680K	2DY-468	

♦ Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	63-4661	APL-697	C478-1meg-S	B11-137 *	PP15L	Volume
B	Shaft			AK-33	RS-3/16	Not Req.	D8-37	
C	Switch			Not Req.	Not Req.	8K3 *	Not Req.	Push-Pull Off-On
R2A	30K	½	63-4493			B20-121X	UT-415	Contrast
	20K Tap							
B	Shaft					8K3	D8-37	
R3A	250K	½	63-4492	AB-50	A47-250K-S	B11-130	U46	Brightness
B	Shaft			AK-33	RS-3/16	8K3 *	D8-37	
R4A	750K	½	63-4491	AB-86	A47-750K-S	B11-136	U54	Vert. Hold
B	Shaft			AK-33	RS-3/16	8K3	D8-37	
R5	5meg	½	63-4050	TT-87	B47-5meg-S	HLC-5	PTA56L	Fringe Lock (Sync Stab.)
R6	750Ω	2(WW)	63-3284	WN-751	39-800	112-650	FL-750	Buzz
	1000Ω Stop			**	**	**	**	
R7A	750K	½	63-3263	AB-86	A47-750K-S	B11-136	PTA754L	Vert. Linearity
B	Shaft			AK-1	FKS-1/4	TM4	Not Req.	
R8	5meg	½	63-4680	TT-87	B47-5meg-S	HLC-5	PTA56L	Vert. Size (Height)
R9A	10K	½	63-4095	TT-14	B47-10K-S	B11-116	TA41L	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R10	3meg	½	63-4655	TT-84	B47-3meg-S	HLC-3	SU-69	Focus

** Use 100Ω 2W Resistor in series with terminal. * Factory Assembled Part #PPQ11-137 (8K3).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	2.2meg			
R12	680K			
R13	1000Ω			
R14	22K			
R15	33K			
R16	470Ω			
R17	68Ω			
R18	1500Ω			
R19	56K			
R20	56K			
R21	470Ω			
R22	27Ω			
R23	8200Ω			
R24	120Ω			
R25	2700Ω			
R26	39K			
R27	330Ω			
R28	22K			
R29	100K			
R30	15K			
R31	150K			
R32	68K			
R33	100K			
R34	15Ω			
R35	7500Ω 5W	PW5-7500	5G-7500	
R36	3900Ω			
R37	330K			
R38	39K			
R39	68K			
R40	15K			Note 1
R41	180K			
R42	15K			Note 1
R43	470K (1W)			Note 1
R44	1.2meg			(680K) *
R45	330K			
R46	3.3meg			(1.5meg) *
R47	4700Ω			
R48	10meg			(8.2meg) *
R49	150K			
R50	68K			
R51	82K			
R52	100K			
R53	680Ω 1W			
R54	680Ω			
R55	470K			
R56	33K			
R57	1200Ω 2W			
R58	680Ω 1W			
R59	330K			
R60	1.8meg			
R61	680K			
R62	33K			
R63	1.5meg			
R64	82K			
R65	470Ω 5W	PW5-470	5G-470	
R66	82Ω			Note 1
R67	560Ω			
R68	560Ω			
R69	330K			
R70	330K			
R71	1meg			
R72	220K			
R73	100K			
R74	150K			
R75	560K			
R76	15meg			(10meg) *
R77	33K 2W			
R78	56K			
R79	12K			
R80	100Ω			
R81	1meg			
R82	100Ω			
R83	10K 2W	PW3-10K	3G-10K	
R84	100K			
R85	Temp. Comp.			#63-4728
R86	3.9Ω			
R87	22K 1W			
R88	6800Ω 4W	PW5-6800	5G-6800	
R89	27K 2W			
R90	820K			

Note 1. Not used in Chassis 16F27. * Value used in Chassis 16F27. ♦ Zenith Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-8	
K2	Vert. Feedback		87-7	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	S-48045	TV-132	6236	RTC-8626	T218	① Complete Assembly Part #S-47967.
B	41.25MC Trap			6226	RTC-8626	T219	② Complete Assembly
L2A	39.75MC Trap	S-41883	TV-152	6225	RTC-8556	T219	Part #S-52287 (Ch.16G27)
B	47.25MC Trap		TV-153	6225	RTC-8556	T219	Part #S-48195 (Ch.16F27).
L3	2nd Video IF	S-50474	TV-130	6234	RTC-8555	T231	③ Wound on 5600Ω Resistor.
L4	3rd Video IF	S-45539	TV-130	6234	RTC-8555	T231	
L5	4th Video IF	S-47968 ①					④ Complete Assembly Part #S-51647.
L6	Peaking (90uh)	S-41879	TV-181	6177	RTC-8594	T304	
L7	RF Choke (8uh)	S-2888	TV-185	6180	RTC-8520	T259	
L8	Peaking (170uh)	S-43619	TV-184	6180	RTC-8597	T310	† Parallel with 5600Ω Resistor.
L8A	4.5MC Trap	S-42872 ②	TV-120	1492 IFT	RTC-9056	T253	
B	2nd Sound IF						
L10	Peaking (170uh)	S-43618 ③	TV-184 †	6180 †	RTC-8597 †	T310 †	
L11	Peaking (250uh)	S-16011	TV-185	6181	RTC-8598	T315	
L12	2nd Sound IF	S-51445 ④	TV-149				
L13	Quadrature	S-45229	TV-121	1480	RTC-8609	T251	
L14	RF Choke (32MH)	S-48193					
L15	RF Choke (10uh)	S-22777	BC-566	4613	RTC-8522	T860	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L16	Horiz. Osc.	S-47150							

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000 Cps)	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L17	.300A	35Ω	.9 Hy.	95-1805	C-2996①	C-2343	26C44	C-34X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ③ 1.75A	520VCT 300A DC	3V ③ 3A	95-1802				R-92A	
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ④ 7.7A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	95-1803		VO-100 ①		A-134X	① Cut and tape blanking lead. ② Use original mounting bracket.
T3	Yoke (Horiz. 15MH) (Vert. 40MH)	95-1795				Y-83-1 ②	
T4	Horiz. Output	S-51583					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5400Ω	3-4Ω	95-1665	A-3026 ①		24S48 ①	S-6Z	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	49-887	4A07	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ZENITH PART No. FUSE	ZENITH HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE HOLDER	BUSS PART No. FUSE	BUSS HOLDER
M1	N	7/10A 250V	136-38		333.700 (N 7/10A 250V)	346010	N 7/10	HN 1/2 to 3/4
M2	3AG	5A 125V S/B	136-46		313005 (3AG 5A 125V S/B)	357001	MDX5	4405
M3	1 1/2"	length of #24 wire						

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M4		103-20 *	6GC1 *		* Dual Selenium Diode, Common Cathode Type
M5		103-23 ♦		1N295	♦ Video Detector, Part of Transformer Assembly (Part #S-47967)

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-302	VHF Complete
	Tuner	175-168 or 175-204	VHF Complete
	Tuner	175-156	VHF Complete
	Tuner	175-176	VHF Complete
	Tuner	175-167 or 175-303	VHF with UHF Provisions
	Tuner	175-175	VHF with UHF Provisions
	Tuner	175-8	UHF
M7	Antenna (Dipole)		JFD REPLACEMENT TYPE #TA 373
	Antenna (Monopole)		JFD REPLACEMENT TYPE #TA 402
M8	Switch *	S-44018	Channel Selector (Located on TV Escutcheon)
M9	Switch *	S-41498	Motor Switch Assembly (Part of Power Tuning)
M10	Motor *	141-153	Power Tuning Drive

* Part of Motor Drive Assembly #S-43732

TV PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO.	F2105C, CU	F2110G, GU	F2111L, LU	F2111P, PU	F2112W, WU	F2214L	F2215J	F2215L	F2230E	F2230M	F2230R	F2230W	G2105C, CU	G2105L, LU	G2110B, BU	G2110G, GU	G2112J, JU	G2112W, WU	G2214L	G2215J	G2215L	G2216L
Safety Glass	192-293		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-VHF Channel Selector	46-2530		X	X													X	X	X	X				
Knob- "	46-2510				X	X	X								X	X								
Knob- "	46-2551																				X	X	X	X
Knob-UHF Channel Selector	S-47079		X	X	X	X	X								X	X	X	X	X	X				
Knob-UHF Channel Indicator	S-43927		X	X	X	X	X								X	X	X	X	X	X				
Knob-Fine Tuning	S-50096							X	X	X	X	X	X	X							X	X	X	X
Knob- "	S-49930			X	X	X	X								X	X	X	X	X	X				
Knob- "	S-51170		X																					
Knob-Volume Contrast	S-45716		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-Vert. Hold, Brightness	S-51171		X												X									
Knob- "	S-49990			X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X
Knob- "	S-52533															X								
Knob-Horizontal Hold	S-46215		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

CABINET PART NO.	CABINET MODEL NO.
14-3202	F2105C
14-3203	F2105CU
14-3171	F2110G
14-3172	F2110GU
14-3173	F2111L
14-3174	F2111LU
14-3180	F2111P
14-3181	F2111PU
14-3175	F2112W

CABINET PART NO.	CABINET MODEL NO.
14-3176	F2112WU
14-3380	F2230R
14-3378	F2230W
14-3201	F2214L
14-3182	F2215J
14-3177	F2215L
14-3382	F2230E
14-3384	F2230M
14-3625	G2105C

CABINET PART NO.	CABINET MODEL NO.
14-3626	G2105CU
14-3627	G2105L
14-3628	G2105LU
14-3442	G2110B
14-3443	G2110BU
14-3435	G2110G
14-3436	G2110GU
14-3447	G2112J
14-3448	G2112JU

CABINET PART NO.	CABINET MODEL NO.
14-3452	G2112W
14-3453	G2112WU
14-3449 or 14-3614	G2214L
14-3446 or 14-3613	G2215J
14-3441 or 14-3612	G2215L
14-3454 or 14-3615	G2216L

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8774
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

S—48583, S—52223

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V15	1st 40KC Amp.	6AU6A
V16	2nd 40KC Amp.	6AU6A
V17	Limiter - Tripler	6AU6A
V18	Discriminator	6AL5

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V19	Volume-Channel Tuning Relay Control	6CM7
V20	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C59	10	350	22-2943	PRSI620	BR1045	TC82	TD-10-450	TVA-1604	
C60	5	50	22-3206	PRSI310	BBR5-50	TC30	TD-5-50	TVA-1303	Note 1

Note 1. Pt. #22-2941 used in some versions.

REMOTE CONTROL RECEIVER PARTS LIST (Continued)

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C61	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C62	100	N750	10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C63	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C64	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C65	680		10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C66	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	GEM-411
C67	680		10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C68	100	N750	10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C69	680		10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C70A	.001		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
B	.001		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10
C71	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	ZTM-S47
C72	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	ZTM-S47
C73	.01	400V			P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C74	.0033		10%		DI-3300		PM6D33	CCD-332	JL233	10TS-D33

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R91	1.5meg				R101	2.2meg			
R92	150K				R102	2.2meg			
R93	470K				R103	2.2meg			
R94	1.2meg				R104	1meg			
R95	68K				R105	1meg			
R96	100K				R106	100K			
R97	1meg				R107	330Ω			
R98	68K				R108	10K			
R99	100Ω				R109	22K			
R100	2.2meg				R110	330Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L18	39.5KC IF	S-43725					
L19	Discriminator (Pri)	S-24788					
L20	Discriminator (Sec)	S-24789					

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	117V ⓐ .34A	220V ⓐ .020A DC Tap ⓐ 30V ⓐ .001A DC, Tap ⓐ 6.3V ⓐ 1.9A	95-1697 ①					① Pt. #95-1612 used in some versions.
	SEC. 2							
	5V ⓐ 2A							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M11	3AG	3/4A 125V S/B	136-41		313.750 (3AG 3/4A 125V S/B)	357001	MDL 3/4	4405

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			
	CURRENT (Measured)	ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M12	.001A	212-21 *		Model 12 *	* Selenium Type

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M13	Relay	195-5 or 195-6	C.W. (Channel Selector)
M14	Relay	S-48660	Step (Volume), Includes Stepper Switch, Pt. #S-43848
M15	Switch	85-580	Auto-Manual (DPDT Slide Type)
M16	Microphone Assy	S-50136	Used with Remote Receiver S-52223
	Microphone Assy	S-47846	Used with Remote Receiver S-48583

VHF TUNER ALIGNMENT INSTRUCTIONS

175, -167, -168, -204

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

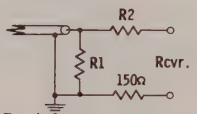
VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range by turning the Fine Tuning shaft until the small index hole in the drive cam is directly over the small hole just below the channel 13 oscillator adjustment screw. Starting with the highest channel operating in the area, adjust the appropriate oscillator adjustment screw for best picture and sound for each channel available.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usuable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. amp. thru 10K to point ⓣ. Low side to chassis.	A201	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A202	"
3.	"	"	201MC	199.25MC 203.75MC	11	"	A203	"
4.	"	"	195MC	193.25MC 197.75MC	10	"	A204	"
5.	"	"	189MC	187.25MC 191.75MC	9	"	A205	"
6.	"	"	183MC	181.25MC 185.75MC	8	"	A206	"
7.	"	"	177MC	175.25MC 179.75MC	7	"	A207	"
8.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust first coil for proper marker position and second coil for maximum gain and symmetry.
9.	"	"	79MC	77.25MC 81.75MC	5	"	A210, A211	"
10.	"	"	69MC	67.25MC 71.75MC	4	"	A212, A213	"
11.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215	"
12.	"	"	57MC	55.25MC 59.75MC	2	"	A216, A217	"



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

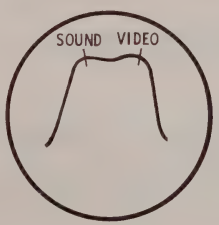
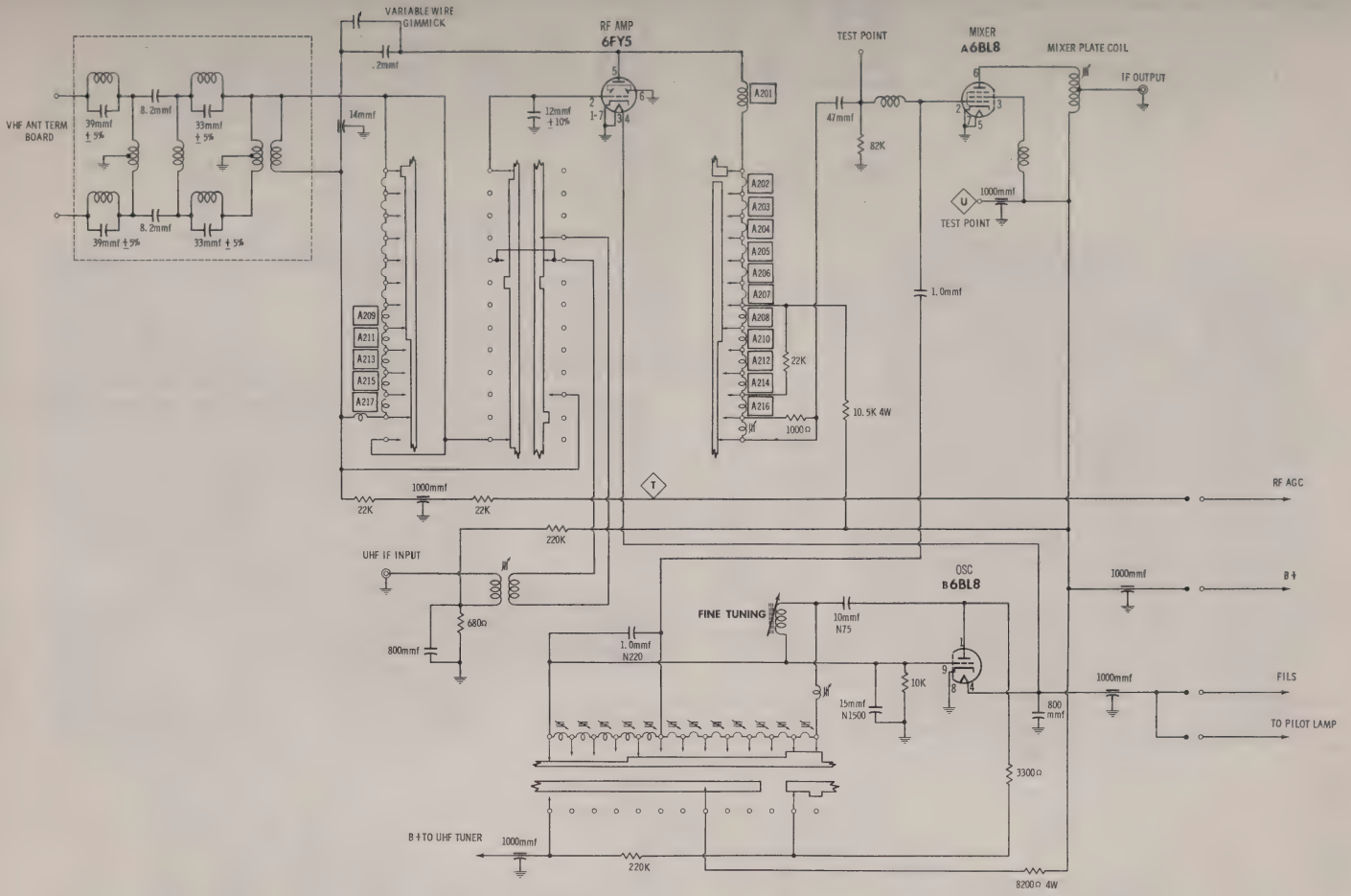


FIG. 202



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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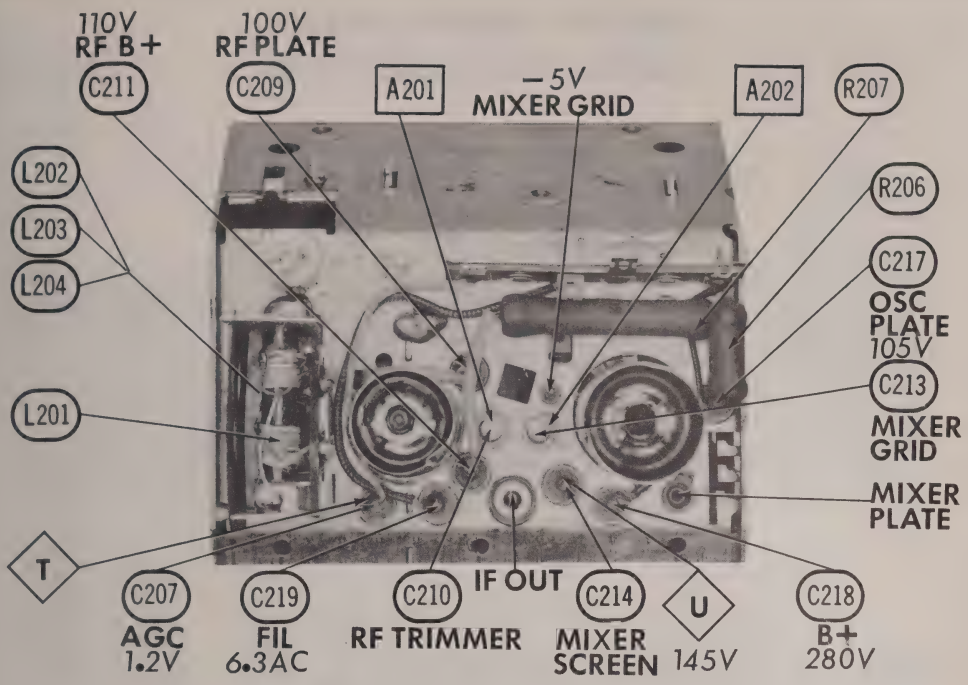
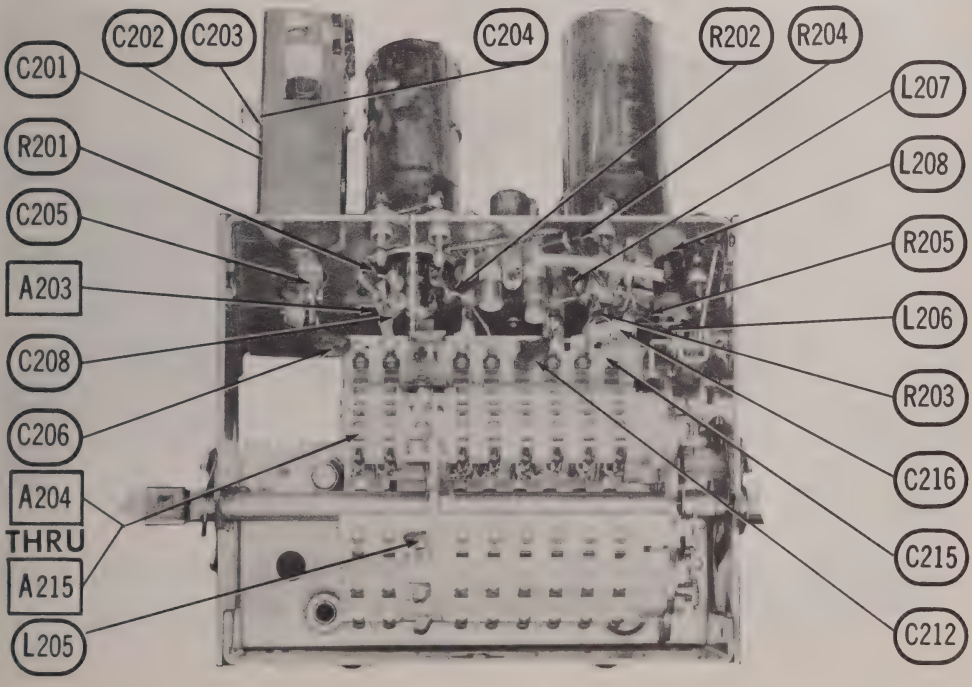
VHF TUNER WITH UHF PROVISIONS 175-167

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU



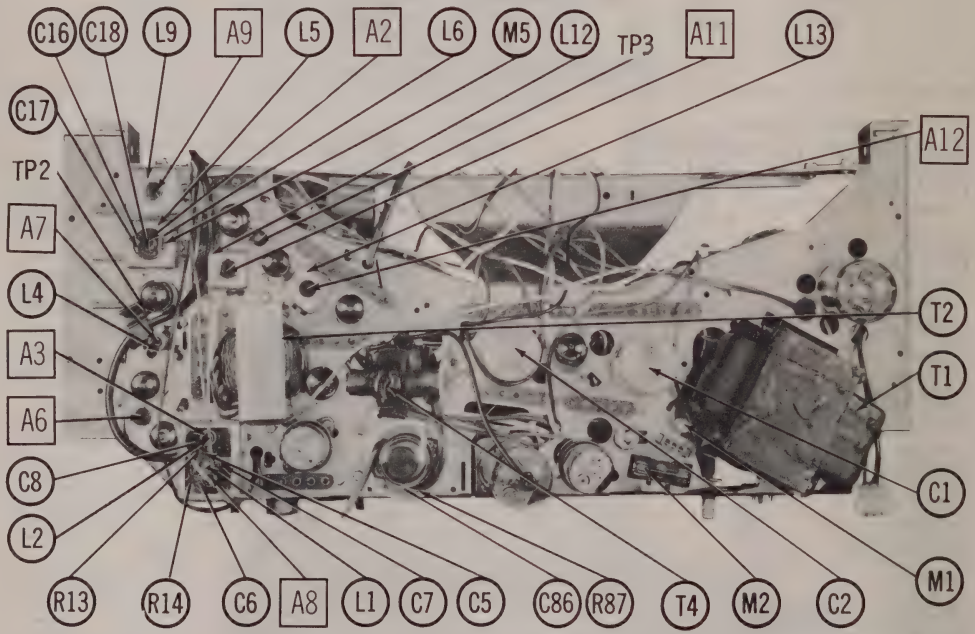
VHF TUNER 175-302 - TOP VIEW



VHF TUNER 175-302 - SIDE VIEW

REMOTE CONTROL RECEIVER ALIGNMENT INSTRUCTIONS

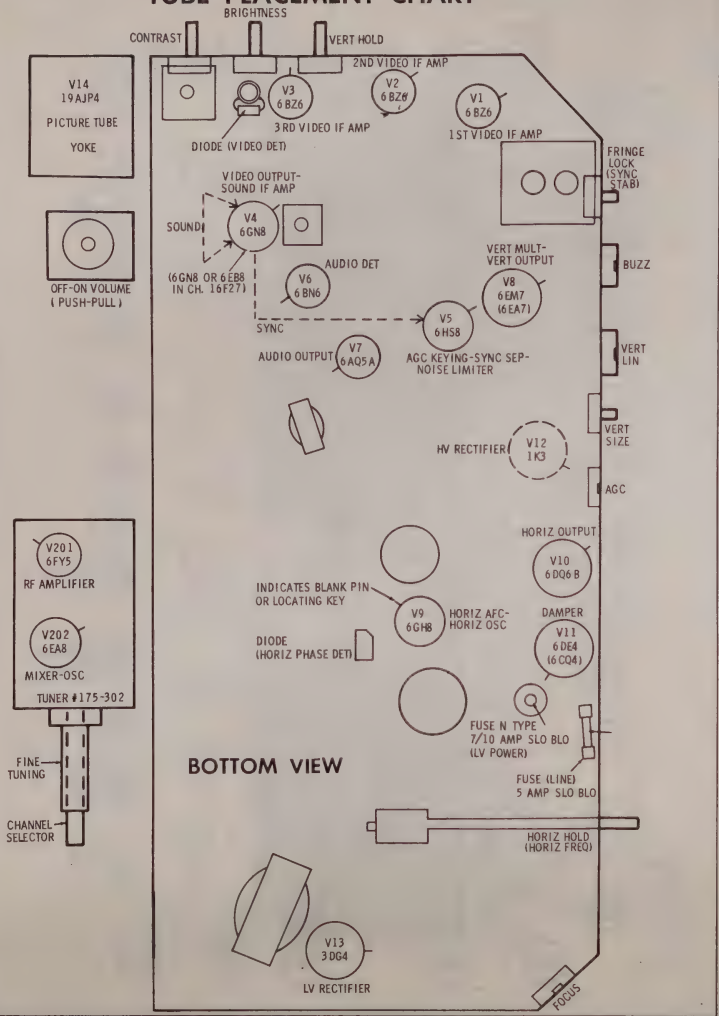
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 100K to pin 1 (grid) of 1st Amp. (V15). Low side to chassis.	39.5KC (Unmod.)	DC probe thru 1meg to point (F). Common to point (G).	A13, A14	Adjust for maximum deflection.
2.	"	"	DC probe to point (F). Common to point (G).	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.



TV CHASSIS —TOP VIEW

REMOTE CONTROL RECEIVER S-52223

TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

TV

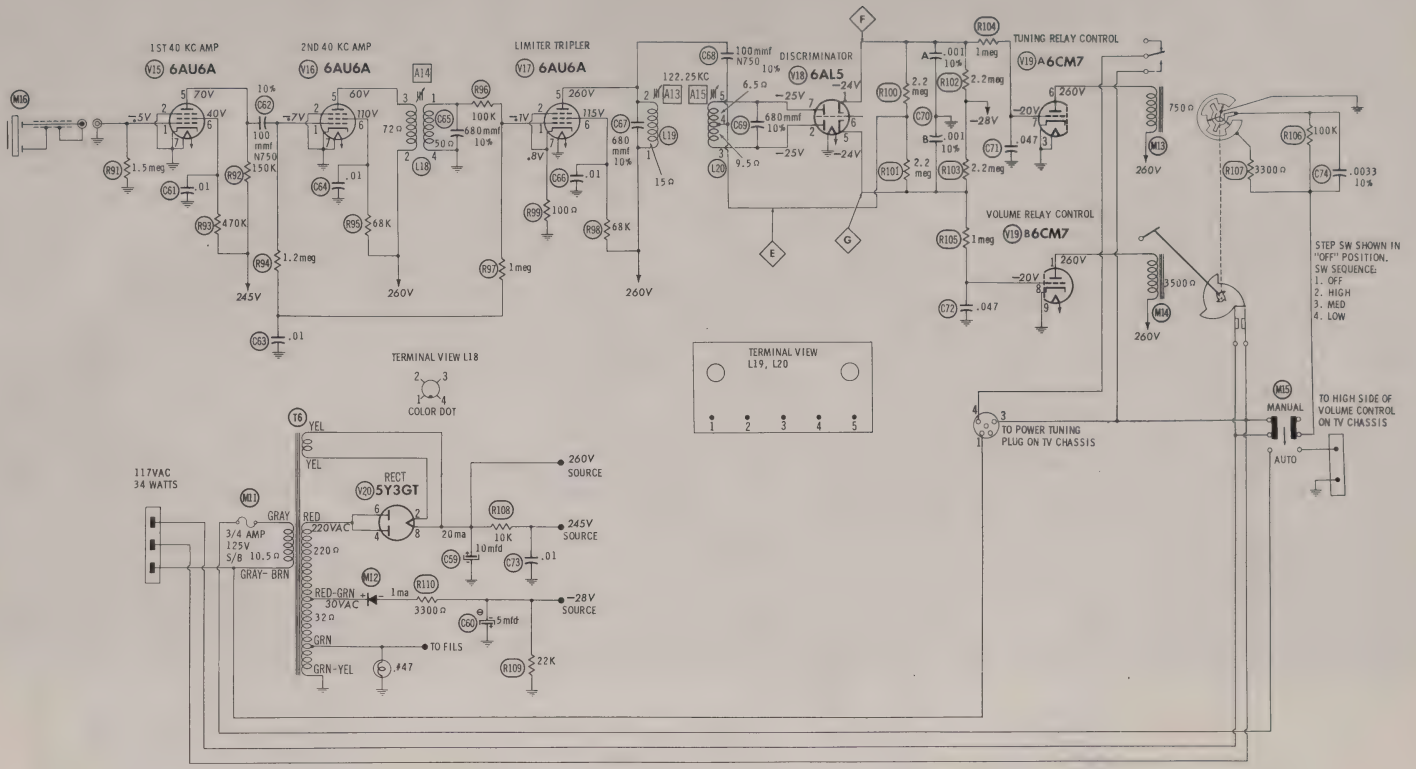
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.9meg	1560Ω	FIL	FIL	▪470Ω	▪470Ω	1500Ω		
V2	6BZ6	38K	INF	FIL	FIL	†505Ω	†505Ω	▪27Ω		
V3	6BZ6	.1Ω	120Ω	FIL	FIL	†6800Ω	†6800Ω	0Ω		
V4	6GN8	0Ω	100K	†680K	FIL	FIL	15Ω	3000Ω	†15K	†6500Ω
V5	6HS8	•8500Ω	†11K	1.2meg	FIL	FIL	160K	•550K	†80K	†10meg
V6	6BN6	•250Ω	.1Ω	FIL	FIL	†33K	3.7Ω	†470K		
V7	6AQ5A	NC	680Ω	FIL	FIL	†1800Ω	†1200Ω	•10K		
V8	6EM7	•1.8meg	†185Ω	550Ω	•600K	•†6.5meg	0Ω	FIL	FIL	
V9	6GH8	†100K	95K	†56K	FIL	FIL	†82K	98Ω	0Ω	1.7meg
V10	6DQ6B	NC	FIL	TP	†10K	1meg	TP	FIL	20Ω	TOP CAP †16Ω
V11	6DE4	NC	TP	3meg	NC	†35Ω	NC	FIL	FIL	
V12	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †230Ω
V13	3DG4	¶30K	NC	¶30K	TP	19Ω	TP	21Ω	TP	
V14	19AJP4	NC	•125K	FIL	FIL	15K	•†2.4meg	30K		
V201	6FY5	0Ω	3.5meg	FIL	FIL	†12K	0Ω	0Ω		
V202	6EA8	†22K	220K	†100K	FIL	FIL	†35Ω	0Ω	0Ω	10K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 1 OF V13. ▪ MEASURED FROM PIN 2 OF V2.
† MEASURED FROM PIN 3 OF V11. NC NO CONNECTION TP TIE POINT

REMOTE CONTROL RECEIVER

V15	6AU6A	1.5meg	0Ω	FIL	FIL	††160K	††480K	0Ω		
V16	6AU6A	2.3meg	0Ω	FIL	FIL	††72Ω	††68K	0Ω		
V17	6AU6A	100K	100Ω	FIL	FIL	††15Ω	††68K	100Ω		
V18	6AL5	1.8meg	2.2meg	FIL	FIL	1.8meg	NC	2.2meg		
V19	6CM7	††3500Ω	TP	0Ω	FIL	FIL	††750Ω	2.6meg	2.6meg	0Ω
V20	5Y3GT	NC	¶	NC	260Ω	TP	260Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V20. NC NO CONNECTION TP TIE POINT



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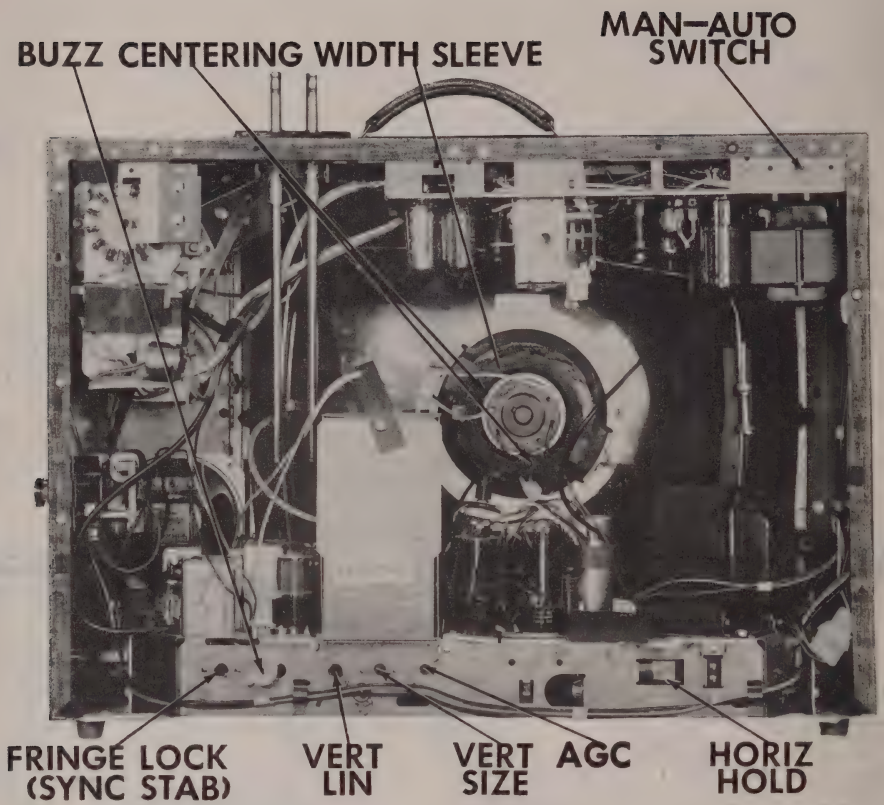
REMOTE CONTROL RECEIVER S-48583, S-52223

ZENITH CHASSIS 16F27, Q, U, T, TU, 16G27, Q, QT, U, T, TU



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to approximately 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install the knob with its pointer centered between the stops.

DISASSEMBLY INSTRUCTIONS

SERVICING NOTE: To gain access to bottom of chassis, remove 2 screws holding bottom cover.

CHASSIS REMOVAL MODEL G2216L

1. Remove 5 push-on type knobs on front and side.
2. Remove 6 screws holding rear cover. Remove rear cover.
3. Remove Remote Control Receiver chassis (4 chassis screws, disconnecting all necessary plugs).
4. Remove 2 screws holding bottom cover. Remove cover.
5. Remove 2 screws holding VHF Tuner bracket and drop bracket down.
6. Remove 10 screws holding cabinet. Disconnect picture tube socket and yoke.
7. Lift cabinet straight up.
8. Remove 4 screws holding chassis to front panel. Remove front panel.

PICTURE TUBE REMOVAL

It is necessary to remove Remote Control Receiver and TV Chassis for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

BLAUPUNKT MODELS Boston 40253, Florenz 20353, Florida 40203/213, Granada 10203

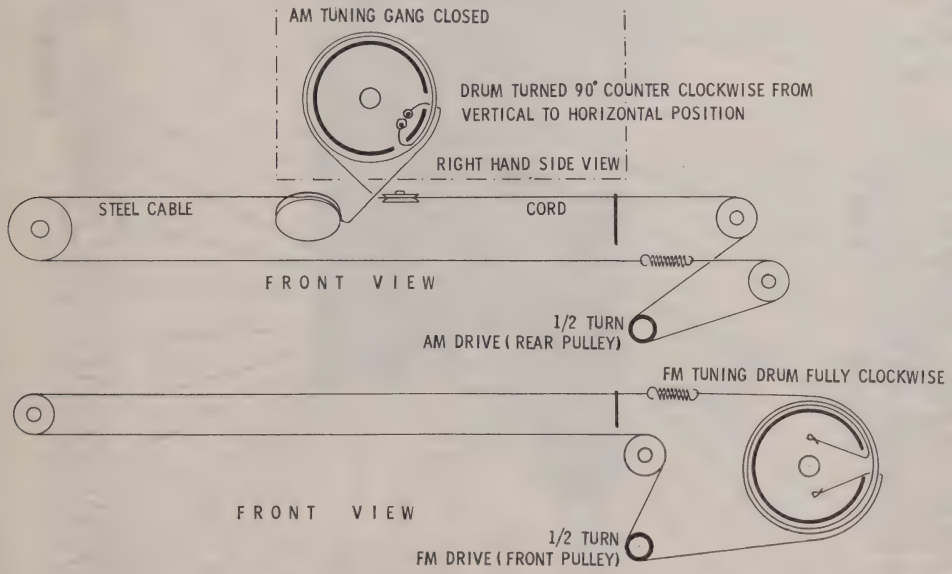
BLAUPUNKT MODELS Boston 40253, Florenz 20353, Florida 40203/213, Granada 10203

MODEL Florenz 20353

BLAUPUNKT MODELS Boston 40253, Florenz 20353, Florida 40203/213, Granada 10203

TRADE NAME	Blaupunkt Models Boston 40253, Florenz 20353, Florida 40203/40213, Granada 10203
IMPORTER	N. Pickens Import Co., 64-01 Woodside Ave., Woodside 77, N. Y.
TYPE SET	AC Operated 7 Tube FM-BC-SW Receiver With Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 68 Watts, .65 Amp. @117 Volts AC
TUNING RANGES	BROADCAST 515 – 1620KC FREQ. MOD. 88 – 108MC SHORT WAVE 5.95 – 18.2MC

DIAL CORD STRINGING

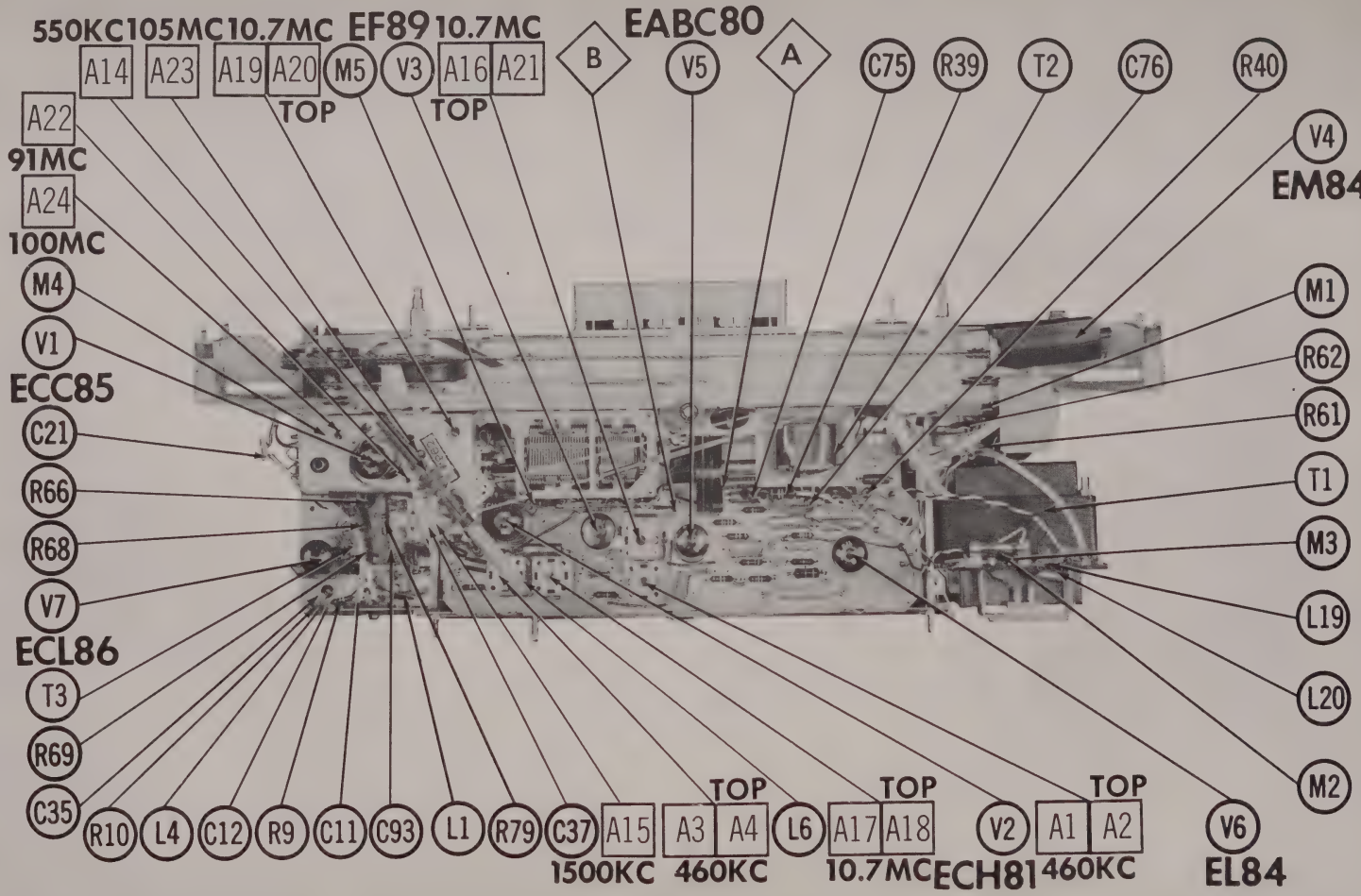


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

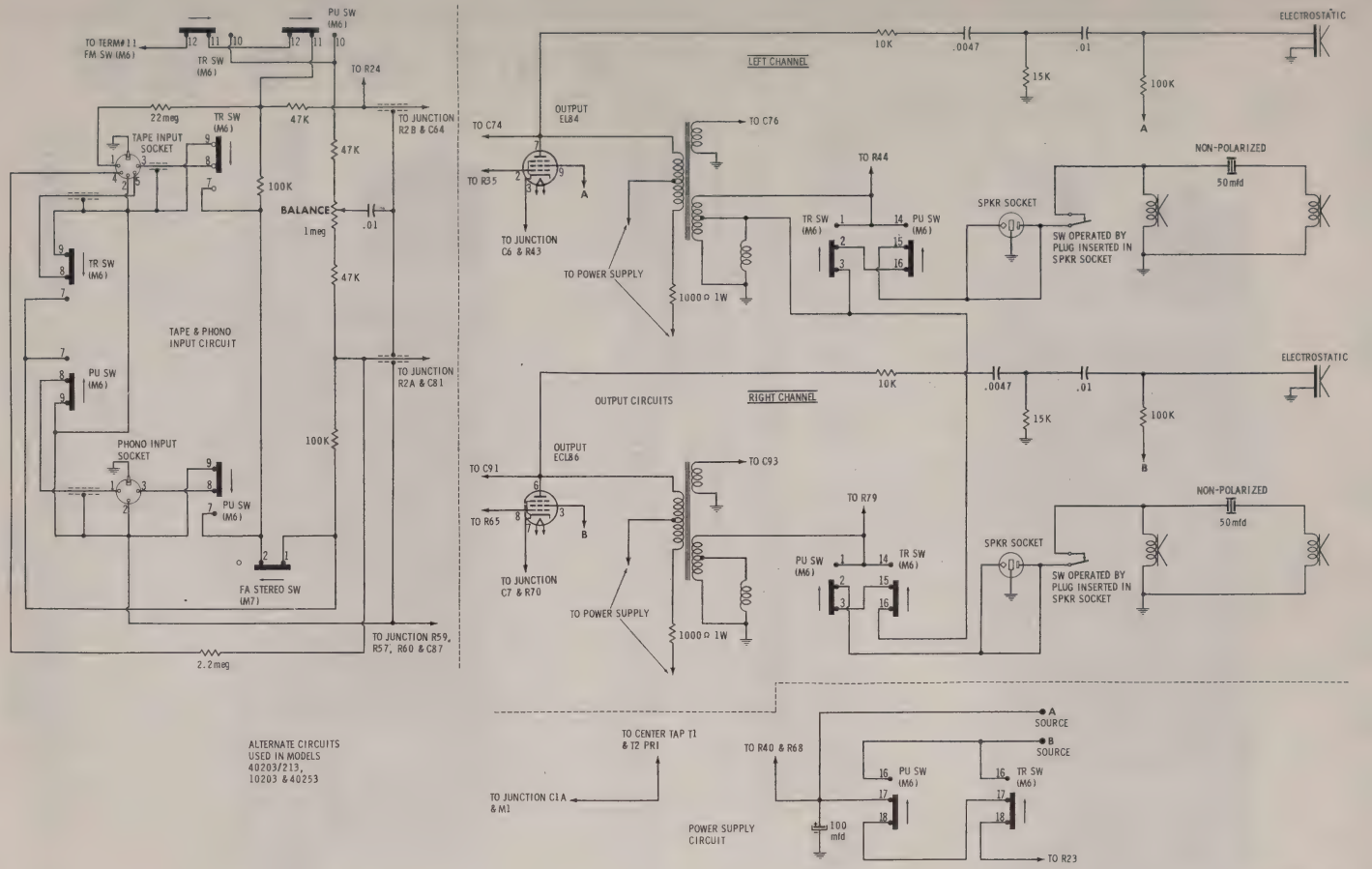
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KK719

SET 551 FOLDER 3



CHASSIS-TOP VIEW



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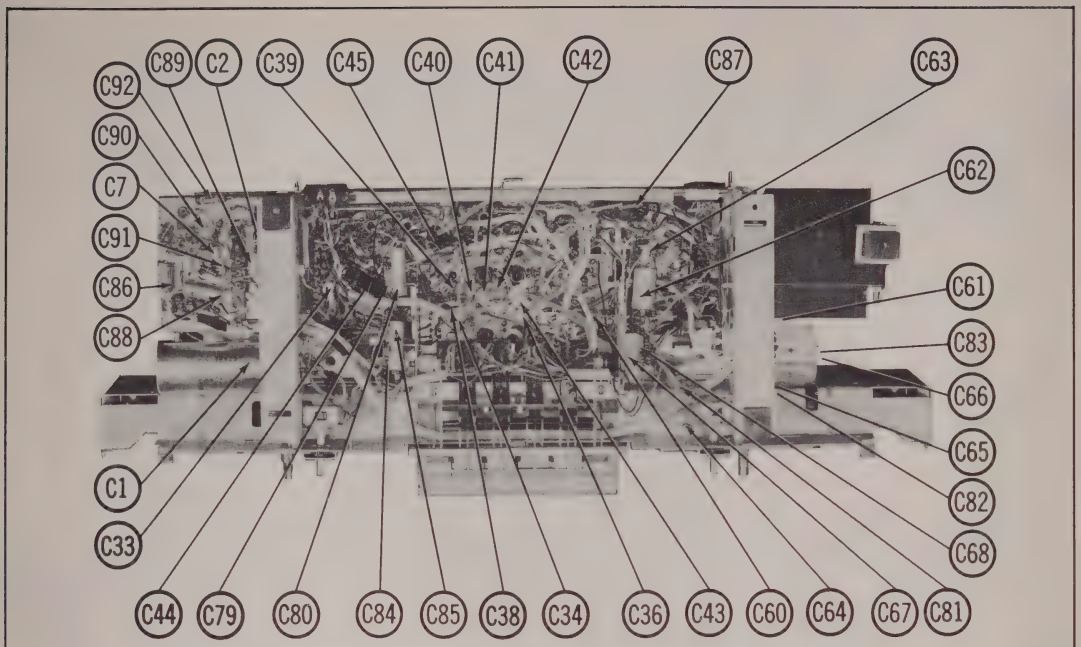
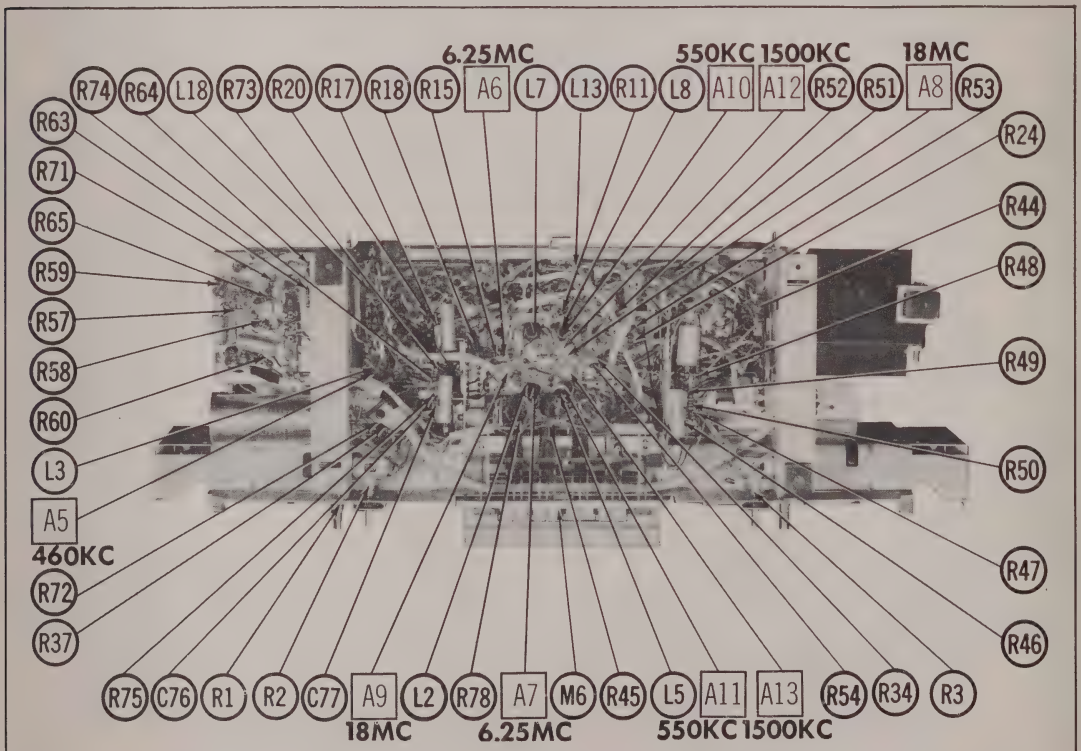
BLAUPUNKT MODELS Boston 40253, Florenz 20353, Florida 40203/213, Granada 10203

ALTERNATE SCHEMATICS

BLAUPUNKT MODELS Boston
40253, Florenz 20353, Florida
40203/213, Granada 10203



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



CHASSIS BOTTOM VIEW-ALIGN., RESISTOR, INDUCTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A4.....	GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A5, A6, A7, A10, A11, A19, A20....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A8, A9, A12, A13, A15, A23, A24..	GENERAL CEMENT #5000, 5003, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A16, A17, A18, A21, A22.....	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT — SELECTOR IN AM POSITION

Set SW bandspread pointer to "O".

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	460KC (400∿ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .1mfd to external AM antenna terminal. Low side to chassis.	"	"	"	A5	Adjust for MINIMUM output.
3.	"	6.25MC	(SW) 6.25MC	"	A6, A7	Adjust for maximum output.
4.	"	18MC	18MC	"	A8, A9	"
5.	"	550KC	(AM) 550KC	"	A10, A11	"
6.	"	1500KC	1500KC	"	A12, A13	Adjust for maximum output. Repeat Steps 3 thru 6.
7.	Loop	550KC	(AM and FA) 550KC	"	A14	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
8.	"	1500KC	1500KC	"	A15	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	High side to ungrounded tube shield floating over FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A16, A17, A18, A19, A20	Adjust for maximum deflection.
10.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

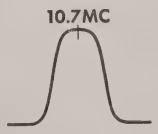


FIG. 1

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	High side to ungrounded tube shield floating over FM converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A16, A17, A18, A19, A20	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
10.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A16 for maximum amplitude and straightness of cross-lines.

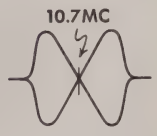
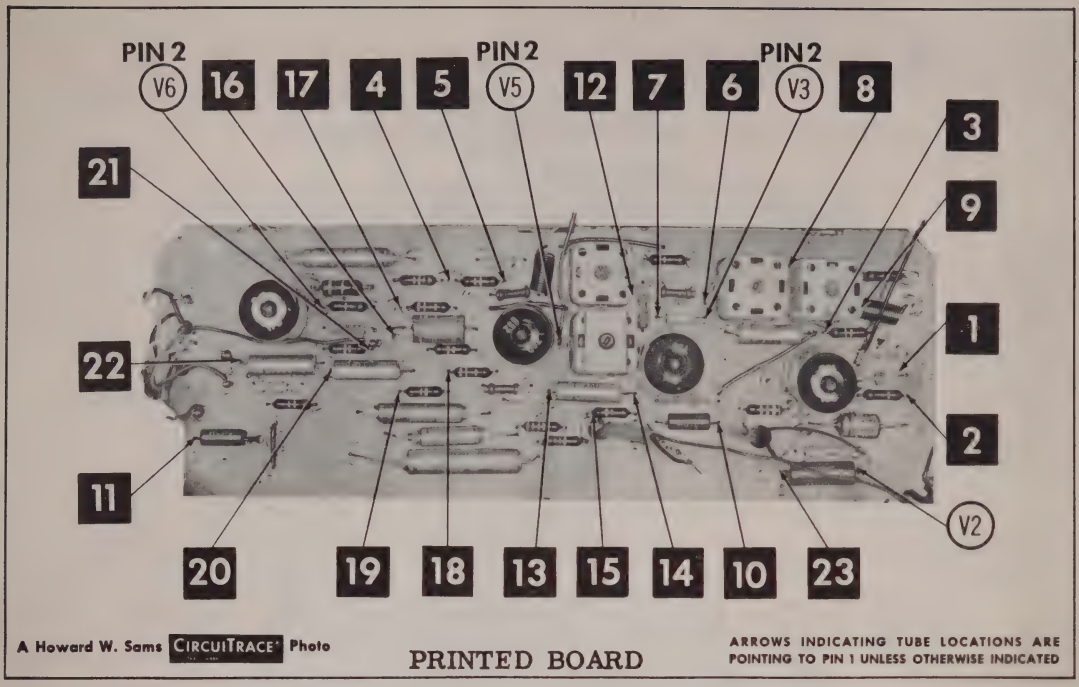


FIG. 2

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	Across FM antenna terminals with 120Ω in each lead.	91MC (Unmod.)	(FM) 91MC	DC probe to point Ⓐ. Common to chassis.	A22	Adjust for maximum deflection.
12.	"	105MC	105MC	"	A23	"
13.	"	100MC	100MC	"	A24	Adjust for maximum deflection. Repeat Steps 11, 12 and 13.



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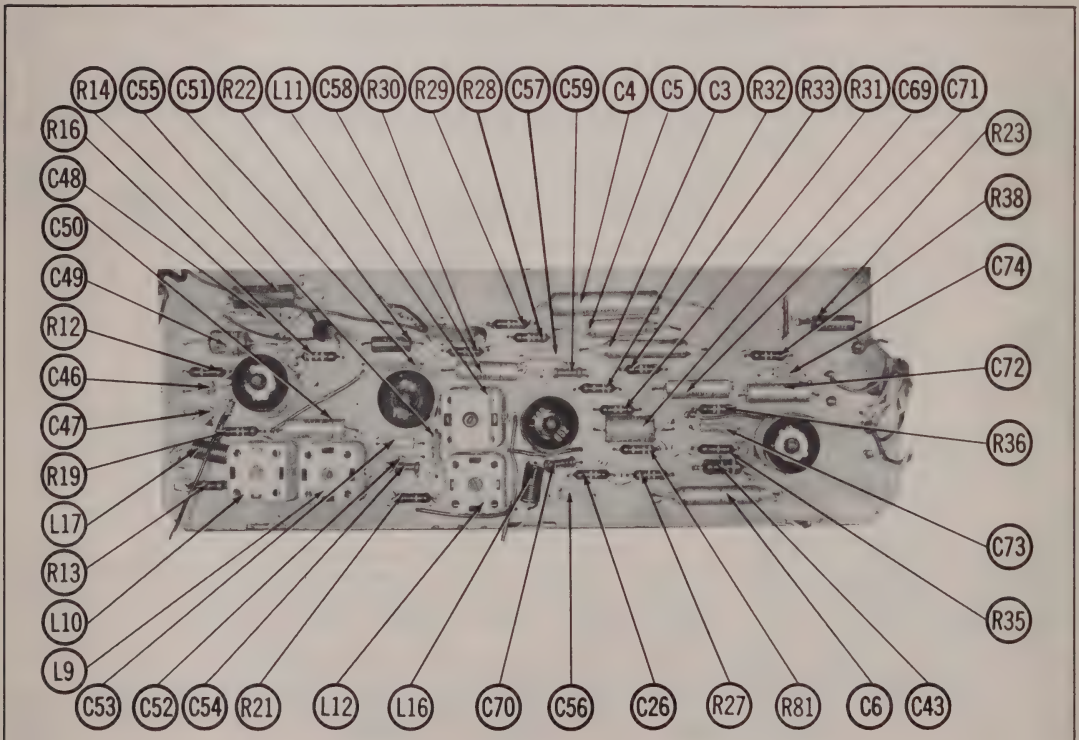
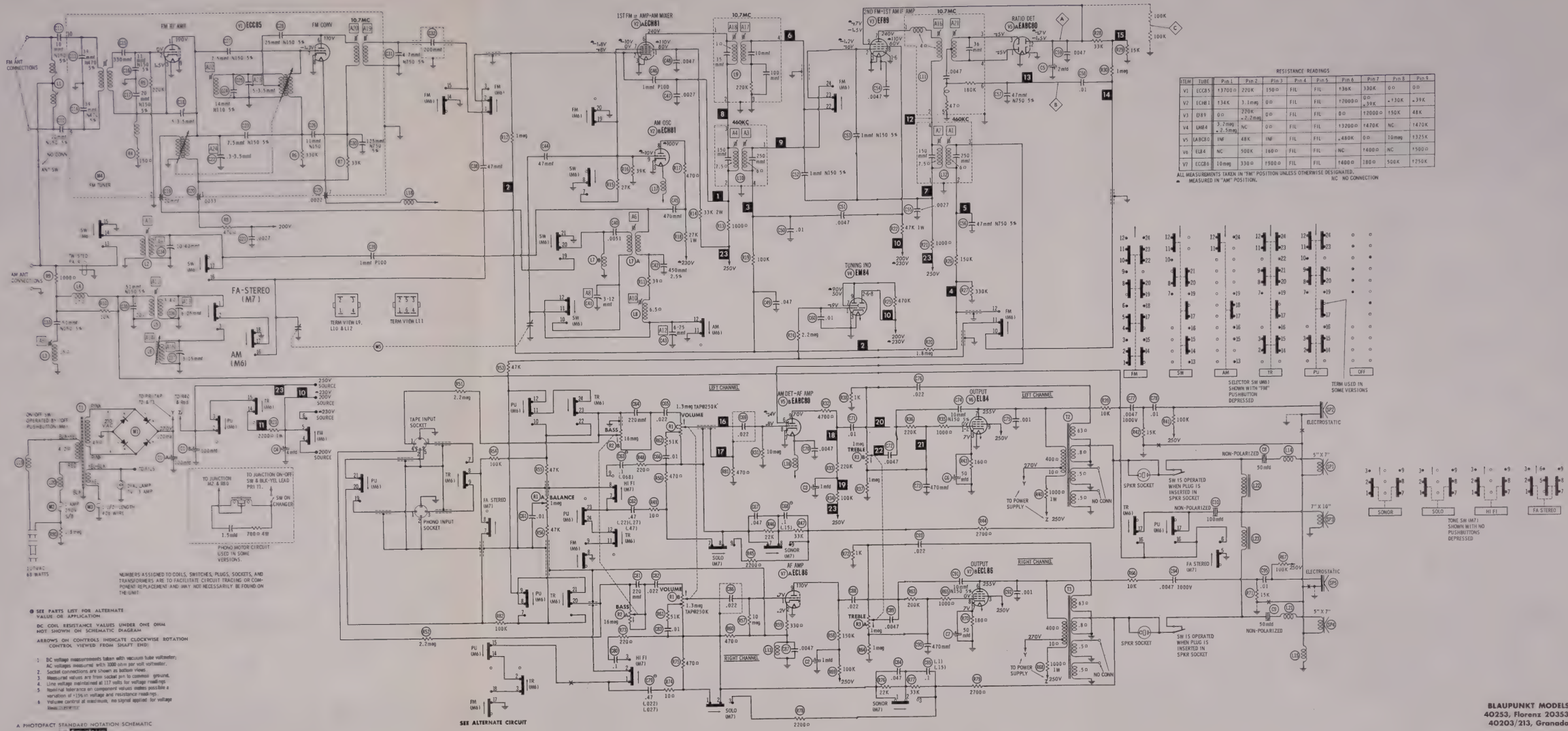
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†3700Ω	220K	150Ω	FIL	FIL	†36K	330K	0Ω	0Ω
V2	ECH81	†34K	3.1meg	0Ω	FIL	FIL	†20000Ω	0Ω ▲39K	▲130K	▲39K
V3	6B9	0Ω	220K ▲2.2meg	0Ω	FIL	FIL	0Ω	†20000Ω	†50K	48K
V4	EM84	NC	0Ω	FIL	FIL	FIL	†3200Ω	†470K	NC	†470K
V5	EABC80	INF	48K	INF	FIL	FIL	▲80K	0Ω	10meg	†325K
V6	EL84	NC	500K	160Ω	FIL	FIL	NC	†400Ω	NC	†500Ω
V7	ECC86	10meg	330Ω	†500Ω	FIL	FIL	†400Ω	180Ω	500K	†250K

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION. NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied, for voltage readings.

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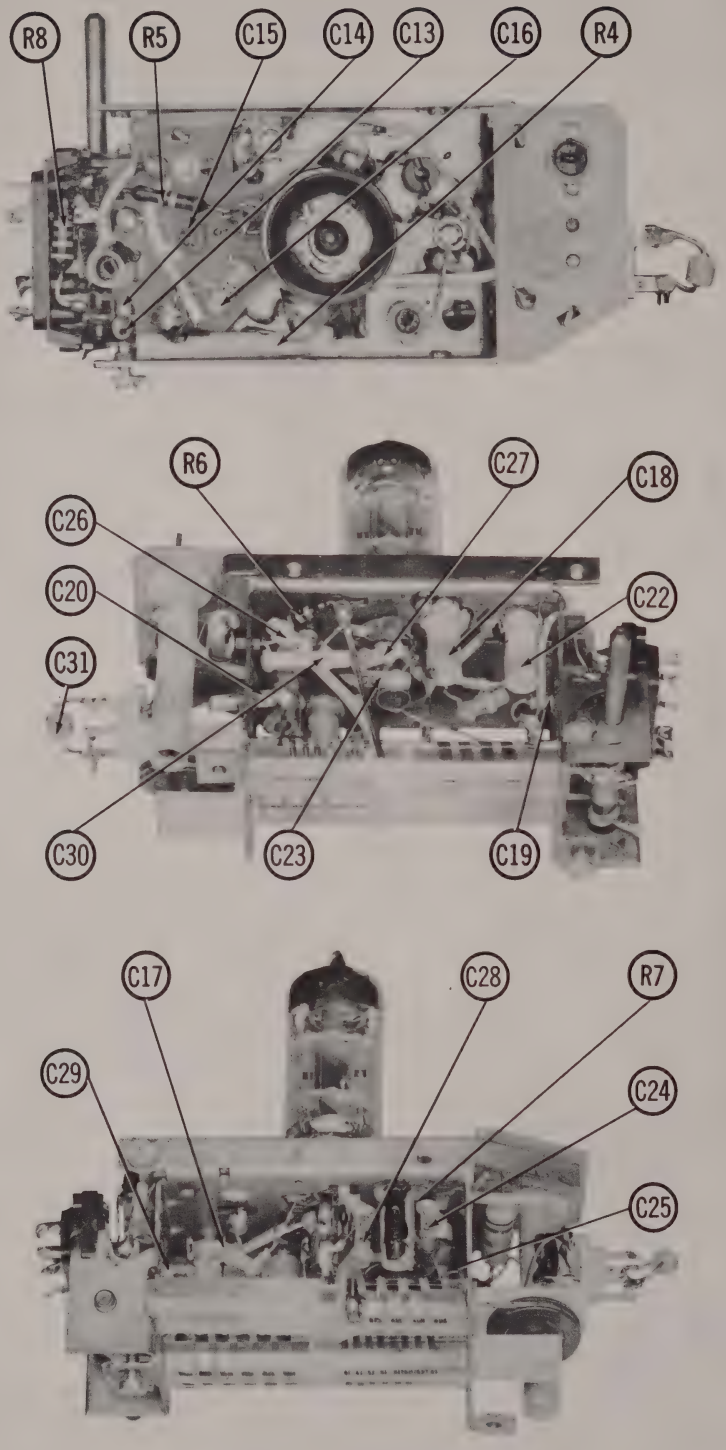
BLAUPUNKT MODELS Boston 40233, Florenz 20353, Florida 40203/213, Granada 10203



FM RF SUBCHASSIS

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA TYPE
V1	FM RF Amp. -FM Conv.	ECC85
V2	1st FM IF Amp. -AM Mixer-AM Osc.	ECH81
V3	2nd FM - 1st AM IF Amp.	EF89
V4	Tuning Indicator	EM84
V5	Ratio Det. -AM Det. - Left Channel AF Amp.	EABC80
V6	Left Channel Output	EL84
V7	Right Channel AF Amp. - Right Channel Output	ECL86

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	350		AFH2-41	A0513	FP150	TMD-2430	TVL-2641	
B	100	350			BRI0035	TC69			
C2	1	350		PRS1700	BR145	TC595	TD-2-450	TVA-1700	
C3	1	350		PRS1700	BR145	TC595	TD-2-450	TVA-1700	
C4	4	350		PRS1600	BR435	TC697	TD-4-450	TVA-1601	
C5	2	30		PTT88	NLW2-50	TC302	MLV2-50	TE-1301	
C6	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C7	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C8	50	6NP		PRS7220	BR5015	TT15X100 †		TVANS-1117*	
C9	50	6NP		PRS7220	BR5015	TT15X100 †		TVANS-1117*	
C10	100	6NP		PRS7340	BRI0015	TCN425		TVANS-1207J*	

† Use 2 units. Connect negative leads together. Connect positive leads into circuit the same as the original non-polarized unit.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	10 N150 5%					*		10TCP-Q10
C12	10 N150 5%					*		10TCP-Q10
C13	39 N470 5%					*		
C14	39 N470 5%					*		
C15	330		DI-330	DD-331	L10T33	* CCD-331	GP333	10TS-T33
C16	11 N150 5%					*		10TCP-Q12
C17	20 N150 5%					*		10TCP-Q22
C18	.5-3.5							
C19	20							
C20	.0033							
C21	.0027		SI 2700	D6-272	BYA10D27	CCD-272	B-227	10TS-D27
C22	.3-3.5							
C23	7.5 N150 5%					*		
C24	14 N110 5%					*		
C25	.5-3.5							
C26	11 N150					*		10TCP-Q12
C27	7.5 N150 5%					*		
C28	25 N150 5%					*		10TCP-Q27
C29	.0022							
C30	125 N750 5%			TCN-130	C10T13U	CCTN-121	CN7-312	10TCU-T12
C31	4.7 N750 5%			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C32	200		D6-200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C33	51 N150 5%					*		
C34	10-40							
C35	51 N150 5%					*		
C36	6-25							
C37	3-15							
C38	47		SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C39	1 P100					*		
C40	.0051		SI 5100	D6-502	L10D51	CCD-502	B-250	5HK-D50
C41	3-12							
C42	450 2.5%							
C43	6-25							
C44	47		SI 47	D6-470	L10Q47	CCD-447	GP447	10TS-Q47
C45	47		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C46	1 P100					*		
C47	.0027		SI 2700	D6-272	BYA10D27	CCD-272	B-227	10TS-D27
C48	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C49	.047 125V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C50	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C51	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C52	1 N150 5%					*		
C53	1 N150 5%					*		
C54	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C55	.0027		SI 2700	D6-272	BYA10D27	CCD-272	B-272	10TS-D27
C56	47 N750 5%			TCN-47	C10Q47U	CCTN-470	CNO-447	10TCU-Q47
C57	47 N750 5%			TCN-47	C10Q47U	CCTN-470	CNO-447	10TCU-Q47
C58	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C59	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C60	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C61	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C62	.47 125V	Note 1	P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C63	.1 350V	Note 2	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C64	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C65	.022 350V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C66	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C67	.047 350V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C68	.1 350V	Note 3	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C69	.022 250V	Note 4	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C70	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C71	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C72	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C73	470		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C74	10 N150 5%					*		10TCP-Q10
C75	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C76	.022 350V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C77	.0047 1000V		P1088N-0047	DD-472	CUB10D47	10DP-2-472	GEM-10247	10TM-D47
C78	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C79	.47 125V	Note 5	P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C80	.1 350V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C81	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C82	.022 350V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C83	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C84	.047 350V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C85	.1 350V	Note 6	P488-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C86	.022 250V	Note 4	P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C87	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C88	.022 350V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C89	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C90	470		SI 470	D6-472	BYA10T47	CCD-471	B-347	10TS-T47
C91	10 N150 5%					*		10TCP-Q10
C92	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C93	.022 350V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C94	.0047 1000V		P1088N-0047	DD-472	CUB10D47	10DP-2-472	GEM-10247	10TM-D47
C95	.01 350V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10

† Alternate Value.

Note 1. Some Models may use .22mfd or .27mfd or .47mfd in this application.

Note 2. Model 40253 uses .068mfd in this application.

Note 3. Models 40203/40213 & 10203 use .15mfd in this application.

Note 4. Shielded unit.

Note 5. Model 40203/40213 uses .022mfd in this application.
Model 40253 uses .027mfd in this application.

Note 6. Some Model may use .1mfd or .15 mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½						Balance Volume, Right Channel
B	1.3meg*	½						Volume, Left Channel
C	1.3meg*	½						Bass, Right Channel
R2A	16meg	1/4						Bass, Left Channel
B	16meg	1/4						Treble, Right Channel
R3A	1meg	1/4						Treble, Left Channel
B	1meg	1/4						

* Tap at 250K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R4	150Ω			
R5	220K			
R6	330K			
R7	33K			
R8	470Ω			
R9	1000Ω			
R10	10K			
R11	390			
R12	1meg			
R13	1000Ω			
R14	33K 2W			
R15	27K			
R16	39K			
R17	470Ω			
R18	27K 1W			
R19	100K			
R20	1.8meg			
R21	1000Ω			
R22	47K 1W			
R23	2200Ω 1W			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R24	2.2meg			
R25	470K			
R26	150K			
R27	330K			
R28	33K			
R29	15K			
R30	1meg			
R31	10meg			
R32	4700Ω			
R33	220K			
R34	100K			
R35	1000Ω			
R36	220K			
R37	1meg			
R38	1000Ω			
R39	10K			
R40	1000Ω 1W			
R41	100K			
R42	15K			
R43	160Ω			
R44	2700Ω			
R45	2200Ω			
R46	22K			
R47	33K			
R48	220Ω			
R49	10Ω			
R50	470Ω			
R51	2.2meg			
R52	2.2meg			
R53	47K			
R54	100K			
R55	47K			
R56	47K			
R57	10meg			
R58	150K			
R59	330Ω			
R60	470Ω			
R61	51K			
R62	51K			
R63	200K			
R64	1meg			
R65	1000Ω			
R66	10K			
R67	100K			
R68	1000Ω 1W			
R69	100K			
R70	180Ω			
R71	15K			
R72	1000Ω			
R73	220Ω			
R74	10Ω			
R75	470Ω			
R76	22K			
R77	33K			
R78	2200Ω			
R79	2700Ω			
R80	1.8meg			
R81	470K			
R82	100K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BLAUPUNKT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	NOTES
L1	Ant. Matching						
L2	SW Ant.						
L3	460KC IF						
L4	RF Choke						
L5	BC Ant.						
L6	Loopstick		BC-419	705-A		T532	
L7A	SW Osc.						
B	RF Choke						
L8	BC Osc.						
L9	2nd FM IF						
L10	1st AM IF						
L11	Ratio Detector						
L12	2nd AM IF						
L13	RF Choke						
L14	Tone Choke						
L15	Tone Choke						
L16	Fil. Choke						
L17	Fil. Choke						
L18	Fil. Choke						
L19	Line Choke						
L20	Line Choke						
L21	Tone Choke						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA BLAUPUNKT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T1	117V ⓐ .65A	310V ⓐ .220A AC	6.3V ⓐ 3.5A						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC. 1	REPLACEMENT DATA BLAUPUNKT PART No.	Merit PART No	Stancor PART No	Thordarson PART No.	Triad PART No	NOTES
T2	4400Ω Tap ⓐ 2.5%	4-6Ω SEC. 2 16Ω SEC. 3 4Ω SEC. 4 4Ω						
T3	4400Ω Tap ⓐ 2.5%	SEC. 1 4-6Ω SEC. 2 16Ω SEC. 3 4Ω SEC. 4 4Ω						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA BLAUPUNKT PART No.	QUAM PART No.	NOTES
SP1	5"x 7"	PM	4-6Ω	LA8II/2Z	57A1	
SP2	Electrostatic			LSH85		
SP3	7"x 10"	PM	4-6Ω	LA7S5/9Z		
SP4	5"x 7"	PM	4-6Ω	LA8II/2Z	57A1	
SP5	Electrostatic			LSH85		

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA BLAUPUNKT PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.120A	B250C125 *	1N1763 ♦	F6 ♦	* Bridge Type Selenium ♦ 4 Required. Add 7.5Ω surge limiter.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA BLAUPUNKT PART No. FUSE	BLAUPUNKT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	1A 250V S/B			31300i (3AG 1A 250V) S/B)	35700L	MDL1	4405
M3	1½" length of #26 wire.							

MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4	FM Tuner		Complete
M5	Tuning Cap.		2 Gang
M6	Switch		Function Selector (Pushbutton Type, Includes Off, PU, TR, AM, SW, & FM)
M7	Switch		Tone (Hi Fi, Solo, Sonar, FA/Stereo)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

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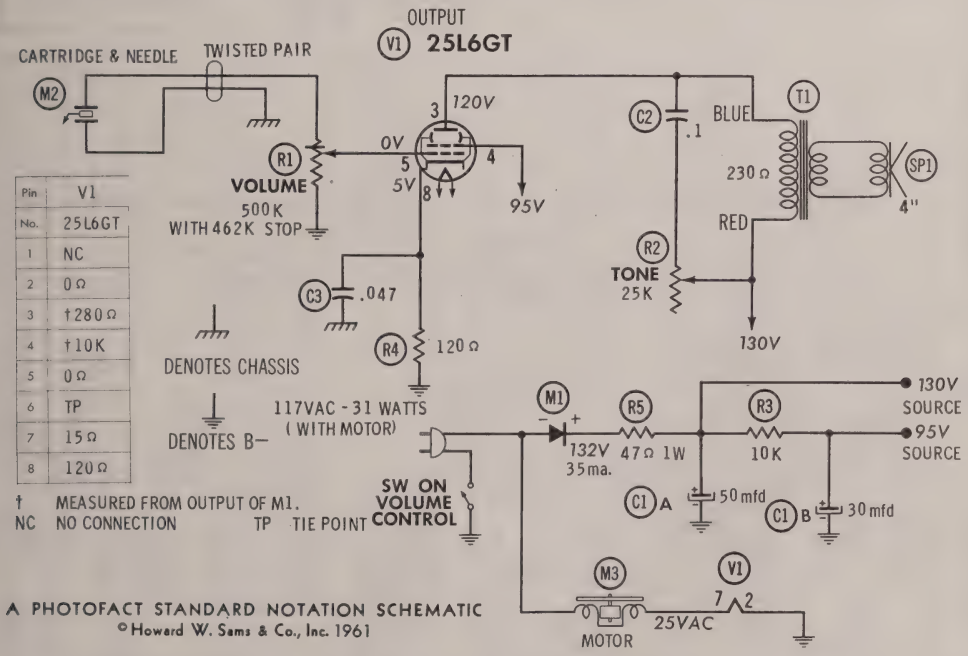
PHOTOFACT® Folder

EMERSON MODEL 933-B (Ch. 120547-B)

EMERSON MODEL
933-B (Ch. 120547-B)

TRADE NAME	Emerson Model 933-B (Ch. 120547-B)
MANUFACTURER	Emerson Radio & Pnono Corp., 524 W. 23rd Street, New York 11, N. Y.
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 31 Watts, .38 Amp. @ 117 Volts AC (Includes Motor)

TO REPLACE TUBE, REMOVE "C" WASHER FROM SPINDLE AND REMOVE TURNTABLE.



Pin No.	V1
1	NC
2	0 Ω
3	†280 Ω
4	†10K
5	0 Ω
6	TP
7	15 Ω
8	120 Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SET 551 FOLDER 4

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25L6GT			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	925312	PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C3	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	390661	B-59	A47-500K-S	Q11-133	U50	Volume
	462K Stop			*	*	*	*	
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	25K	½	390662	B-25	A47-25K-W	Q13-120	U26A	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use 39K resistors in series with right hand terminal, viewed shaft end terminals down.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	10K				R5	47Ω 1W			
R4	120Ω								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	EMERSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	(Part of SP1)	A-3025	A-3332	24S53	S-12X	

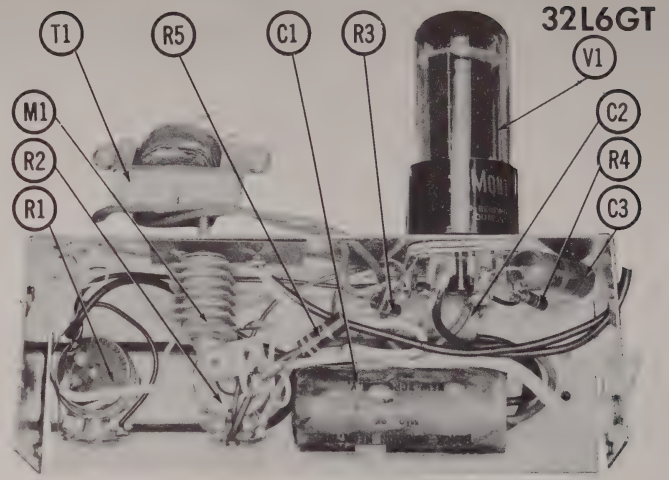
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	180240 *	4A07	* Includes T1

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	EMERSON PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.035A	817103 ♦	1N1763 *	75 ♦	SR200 *	♦ Selenium * Silicon (Add surge limiting resistor)

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	EMERSON PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	963045	963046 *	310-2	N8-2 *	46	Not Req.	1P-2S	N-1P-2S *	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Motor Ass'y.	819162	Complete
	Idler Wheel	961682	WALSCO Part No. 1490-01

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	480668	Volume, Tone
Knob	963110	Speed
Cabinet	141176	Ebony
Cabinet	141176A	Green
Cabinet	141176B	Tan
Cabinet	141176C	Grey

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

FANON
MODEL 3510

FANON
MODEL 3510

FANON
MODEL 3510

TRADE NAME	Fanon Model 3510
MANUFACTURER	Fanon Electronic Sales Corp., A Div. of Fanon Electronic Industries, Inc., 439 Frelinghuysen Ave., Newark 12, N. J.
TYPE SET	Battery Operated Transistorized Mobile Audio Amplifier
POWER SUPPLY	12 Volt Storage Battery RATING .24 Amp. @12.6 Volts DC

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KX778

SET 551 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2SB171A	AF Amplifier	2N408		PNP
X2	2SB176	Driver	2N109		PNP
X3	2SB126	Output	2N301		PNP
X4	2SB126	Output	2N301		PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	FANON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	200	25		PRS1280	BR20015	TC496	TD-250-25	TVA-1208	
C2	200	25		PRS1280	BR20015	TC496	TD-250-25	TVA-1208	
C3	100	10		PTT46	NLW100-12	TT15X100	MLV100-10	TE-1119.3	
C4	10	10		PTT39	NLW10-15	TT12X10	MLV10-10	TE-1114	
C5	100	10		PTT46	NLW100-12	TT15X100	MLV100-10	TE-1119.3	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.5 400V		P488N-5		CUB4P5	4DP-6-504	GEM-405	4TM-P50
C7	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C9	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FANON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg							PA Volume
R2	100K							Amp. Volume

RESISTORS

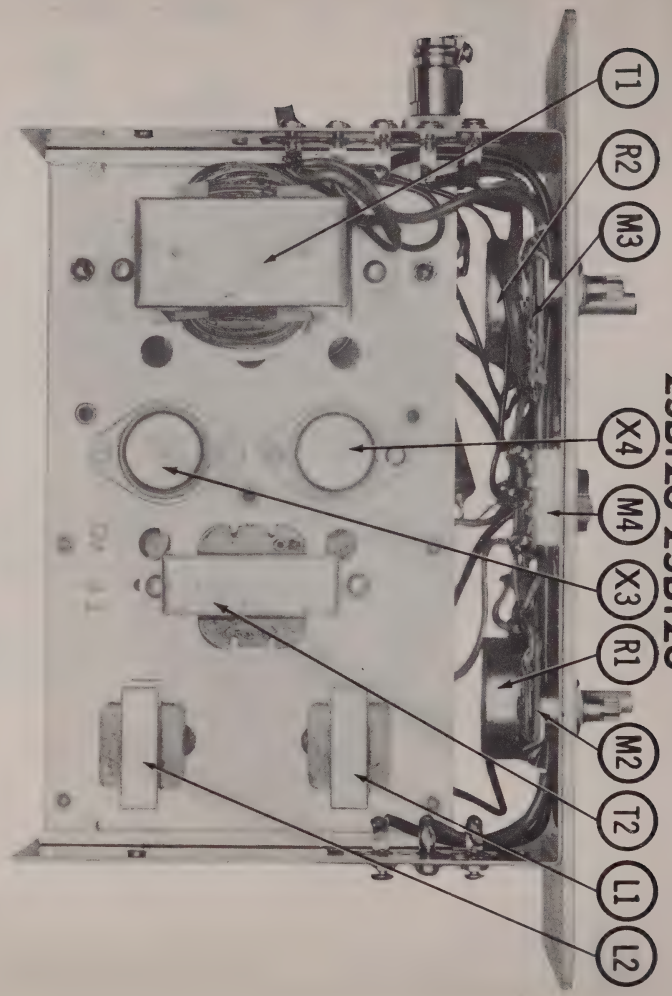
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	80K				R9	5000Ω			
R4	1000Ω				R10	2500Ω			
R5	80K				R11	500K			
R6	10K				R12	500Ω			
R7	1000Ω				R13	5Ω 1W			
R8	2500Ω				R14	300Ω 1W			
					R15	5Ω 1W			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	FANON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L1	.070A	80Ω	1.2 HY						
L2	.070A	80Ω	1.2 HY						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FANON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6	1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FANON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	16Ω CT	8Ω Tap ⓐ 4Ω						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FANON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002 (3AG 2A 250V)	155020	AGC 2	HRJ

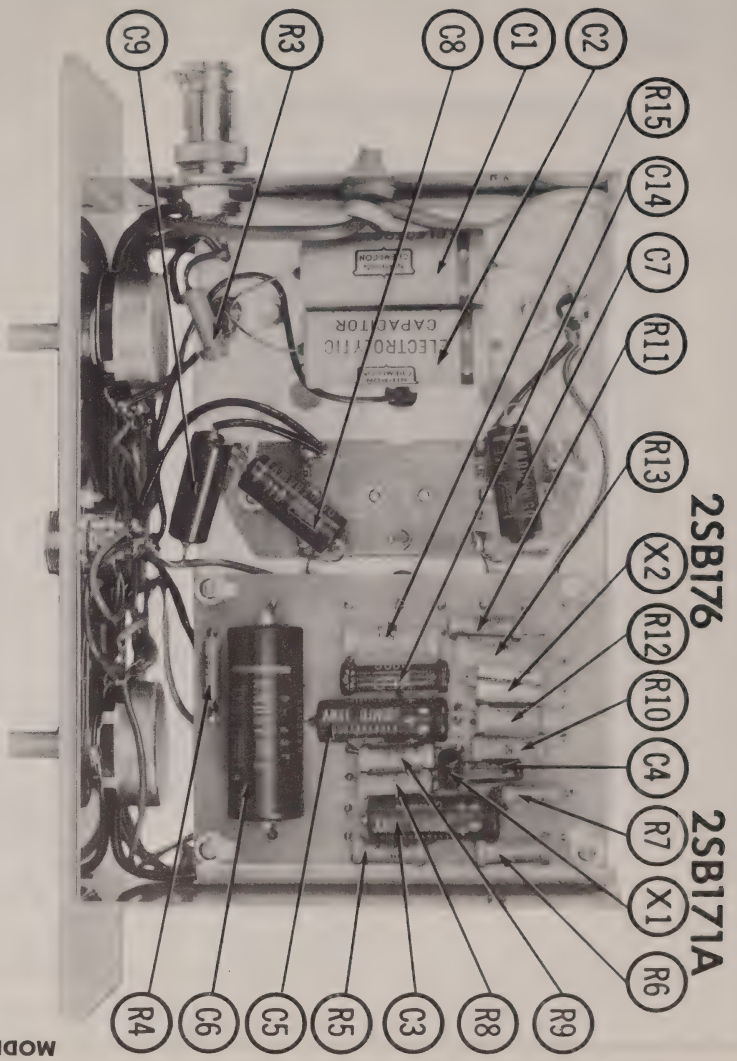
MISCELLANEOUS

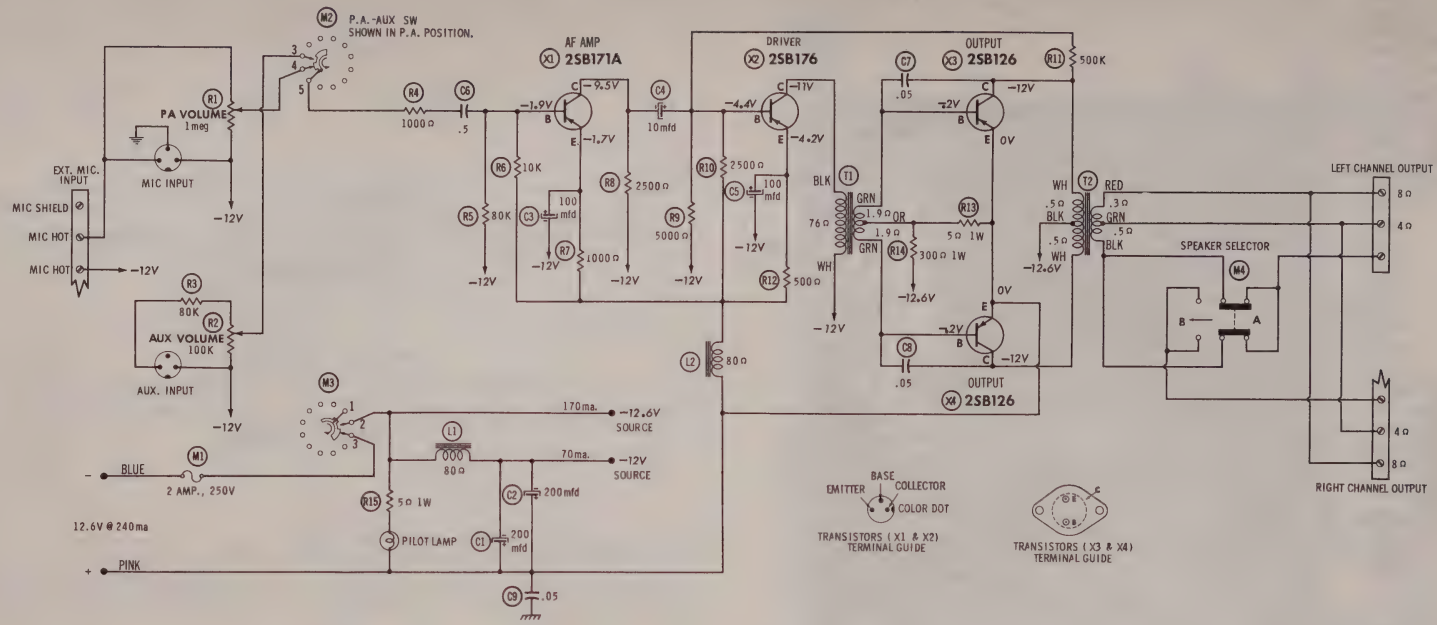
ITEM No.	PART NAME	FANON PART No.	NOTES
M2	Switch		P.A Aux. (Rotary Type)
M3	Switch		Power Off-On (Rotary Type)
M4	Switch		Speaker Selector

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

CHASSIS—BOTTOM VIEW





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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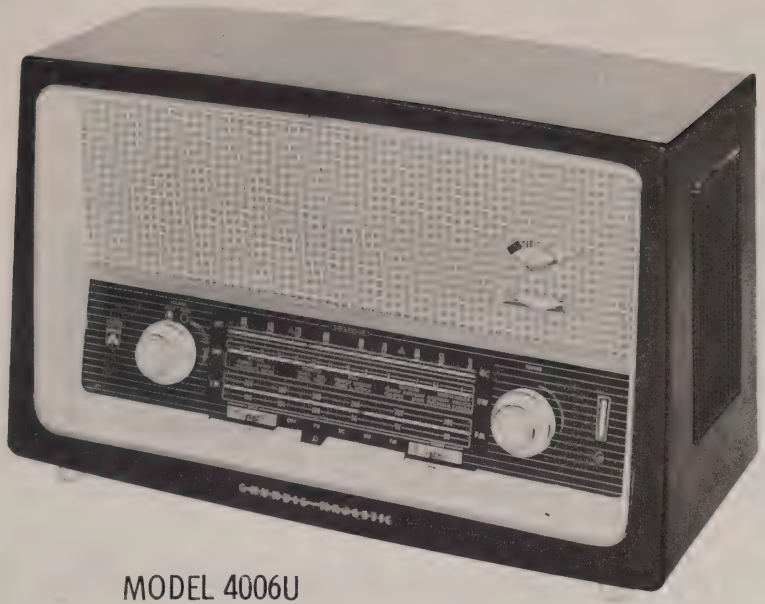
FANON
MODEL 3510

PHOTOFACT® Folder

GRUNDIG MAJESTIC MODELS SO2U, SO11U, SO12U, 4006U

GRUNDIG MAJESTIC MODELS
SO2U, SO11U, SO12U, 4006U

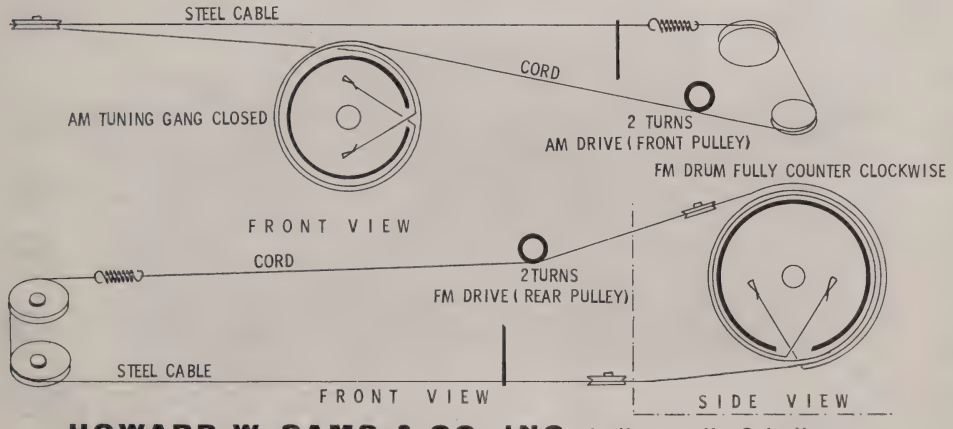


MODEL 4006U

GRUNDIG MAJESTIC MODELS
SO2U, SO11U, SO12U, 4006U

TRADE NAME	Grundig Majestic Models SO2U, SO11U, SO12U, 4006U		
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois		
TYPE SET	AC Operated 8 Tube FM-BC-SW Receiver		
POWER SUPPLY	110 - 120/220 Volts AC, 60 Cycles	RATING	54 Watts, .5 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	510 — 1620KC	FREQ. MOD. SHORT WAVE	88 — 108MC 5.9 — 16MC

DIAL CORD STRINGING



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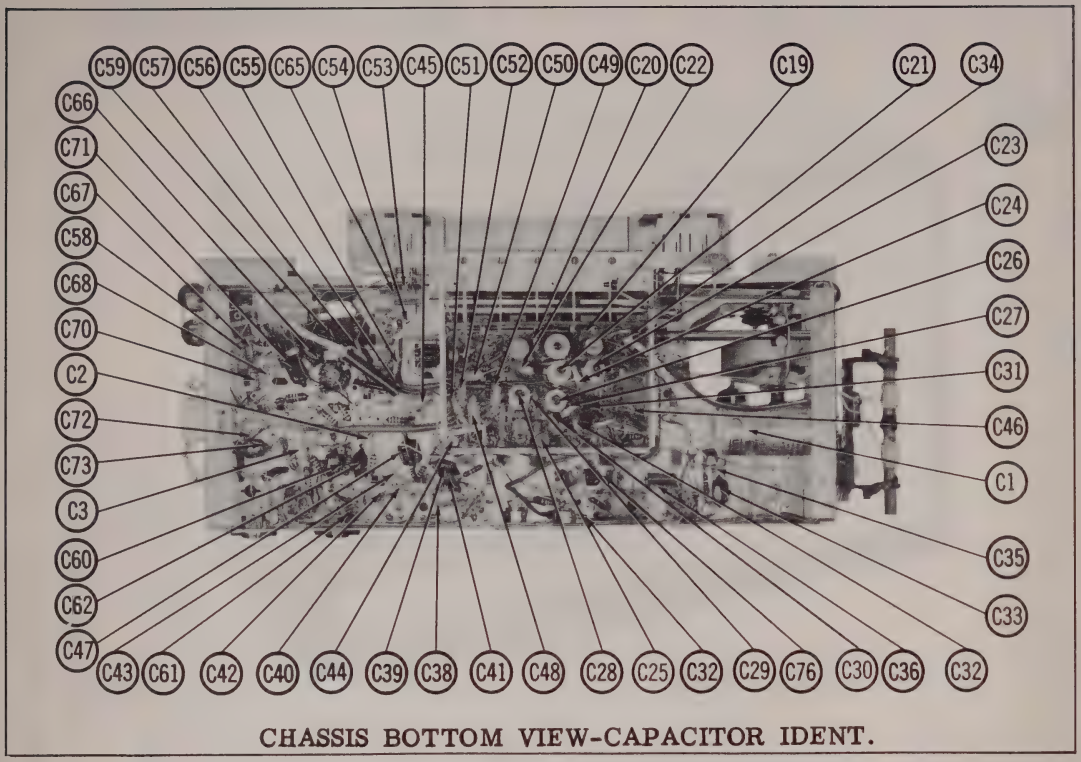
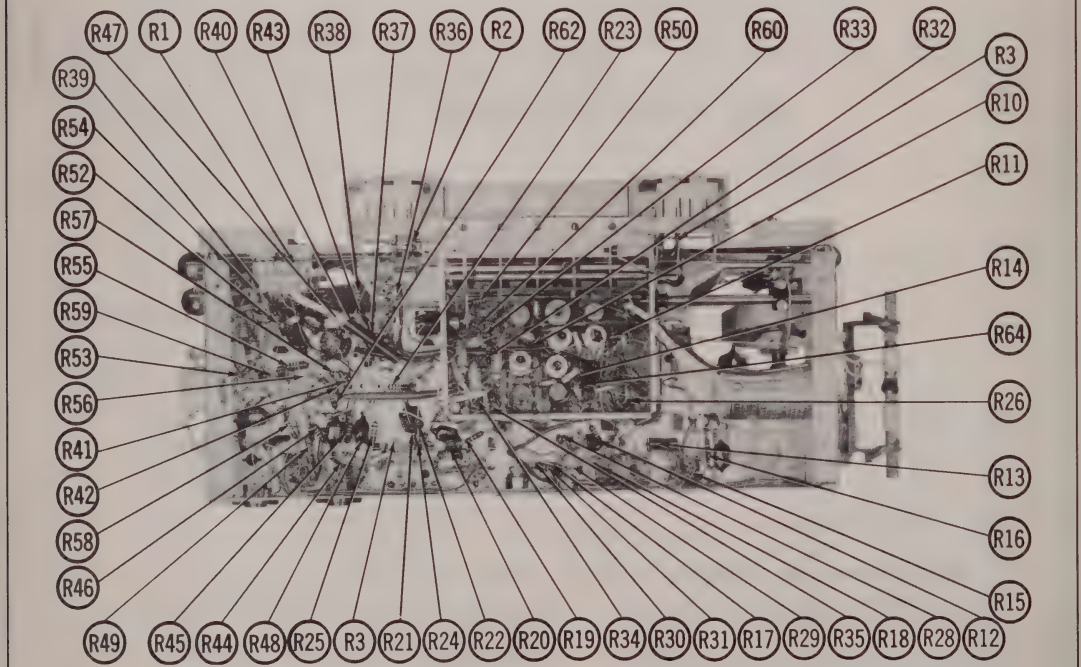
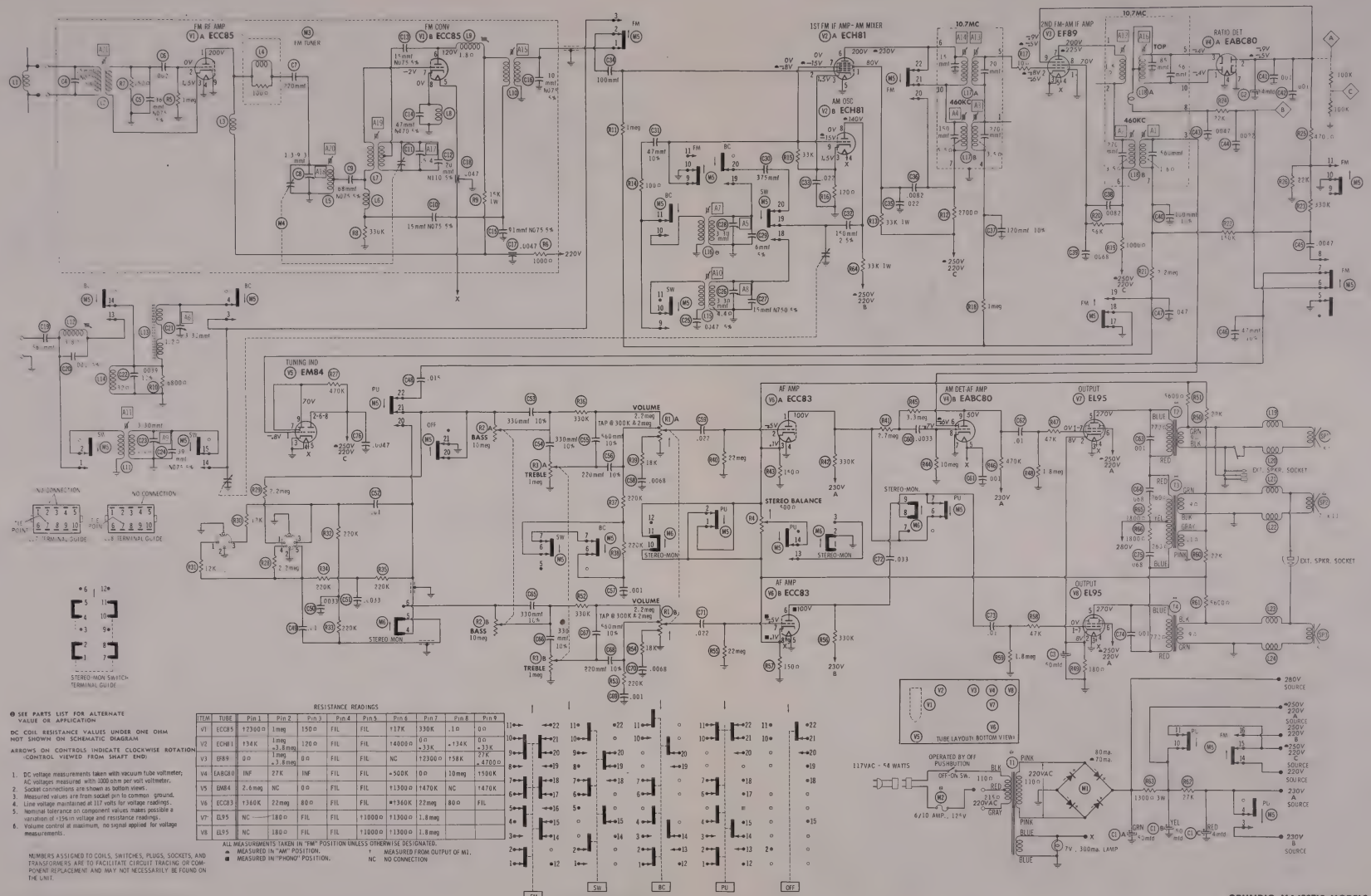
SET 551 FOLDER 6



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION

CONTROL VIEWED FROM SHAFT END:

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†230Ω	1 meg	150Ω	FIL	FIL	†17K	330K	.1Ω	0Ω
V2	ECH81	†34K	1 meg +3.8meg	120Ω	FIL	FIL	†400Ω	0Ω +33K	+134K	0Ω +33K
V3	EF89	0Ω	1 meg +3.8meg	0Ω	FIL	FIL	NC	†230Ω	†58K	27K +4700Ω
V4	EABC80	INF	27K	INF	FIL	FIL	+500K	0Ω	10 meg	†500K
V5	EM84	2.6 meg	NC	0Ω	FIL	FIL	†1300Ω	†470K	NC	†470K
V6	ECC83	†360K	22 meg	80Ω	FIL	FIL	*†360K	22 meg	80Ω	FIL
V7	EL95	NC	180Ω	FIL	FIL	FIL	†1000Ω	†1300Ω	1.8 meg	
V8	EL95	NC	180Ω	FIL	FIL	FIL	†1000Ω	†1300Ω	1.8 meg	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION. † MEASURED FROM OUTPUT OF M1.
■ MEASURED IN "PHONO" POSITION. NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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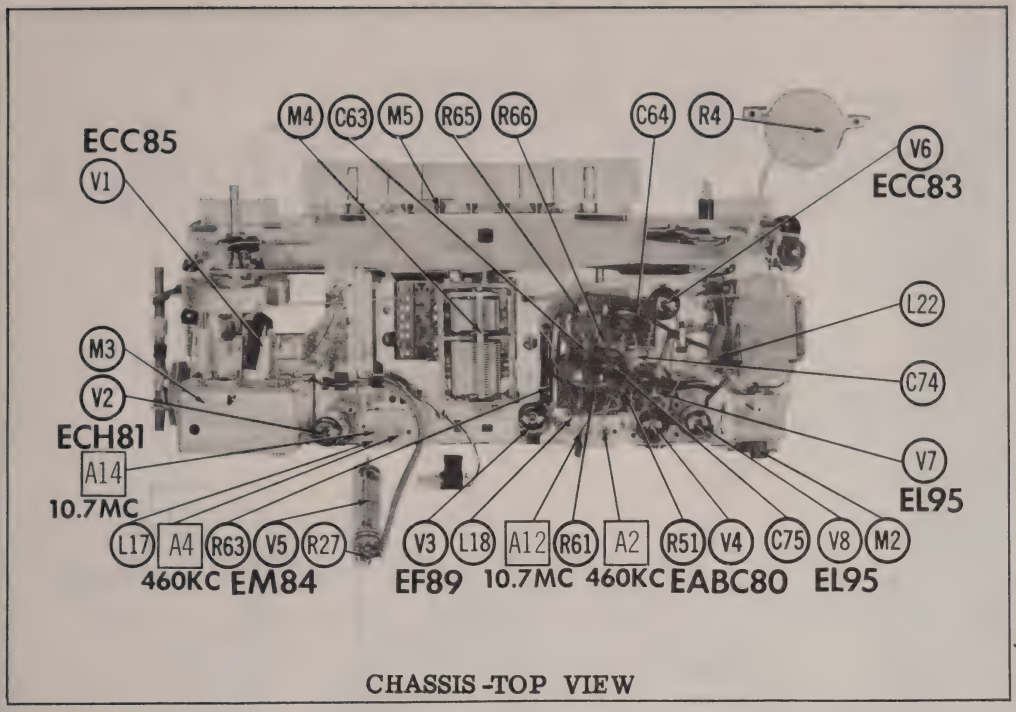
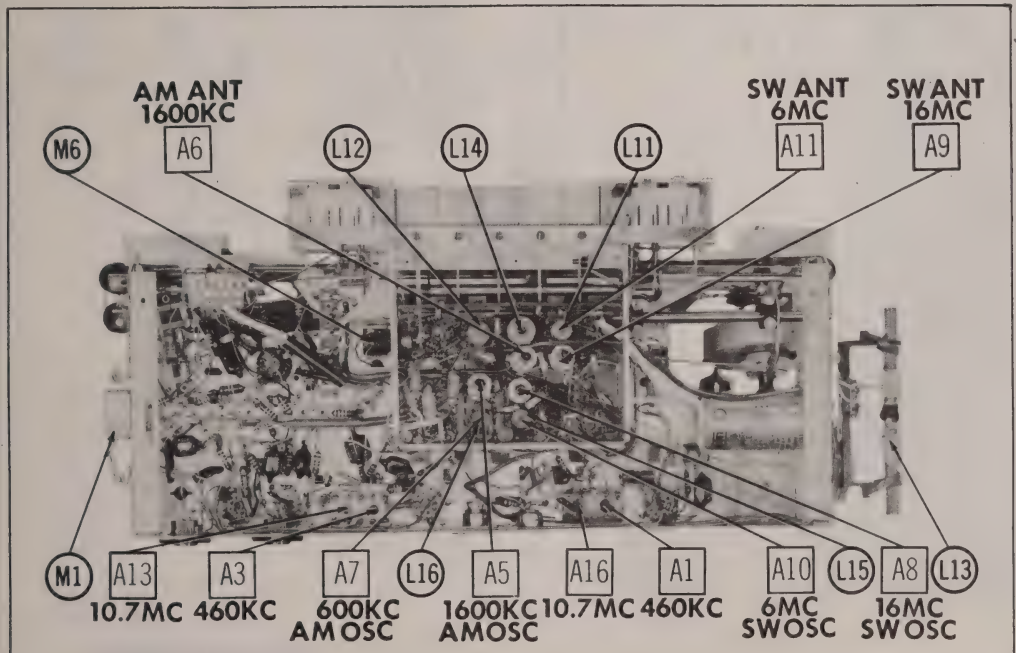
GRUNDIG MAJESTIC MODELS SO2U, SO11U, SO12U, 4006U



CHASSIS -TOP VIEW



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A17, A18... GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298
WALSCO #2516, 2518, 2519

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	460KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 470Ω to AM antenna terminal. Low side to chassis.	1600KC	1600KC	"	A5, A6	"
3.	"	600KC	600KC	"	A7	"
4.	"	16MC	(SW) 16MC	"	A8, A9	"
5.	"	6MC	6MC	"	A10, A11	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A12, A13, A14, A15	Adjust for maximum deflection.
7.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE – SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	Across FM antenna terminals.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A12, A13, A14, A15	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
7.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A16	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A17, A18	Adjust for maximum deflection.
9.	"	88MC	88MC	"	A19, A20, A21	"

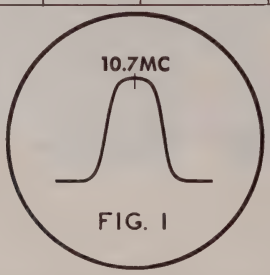


FIG. 1

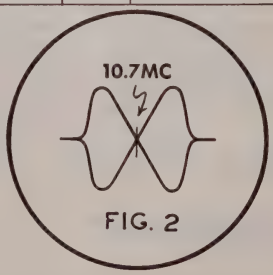


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. - FM Conv.	ECC85
V2	1st FM IF Amp. - AM Mixer - AM Osc.	ECH81
V3	2nd FM - AM IF Amp.	EF89
V4	FM Ratio Det. - AM Det. - Left Channel AF Amp.	EABC80
V5	Tuning Indicator	EM84
V6	Left Channel AF Amp. - Right Channel AF Amp.	ECC83
V7	Left Channel Output	EL95
V8	Right Channel Output	EL95

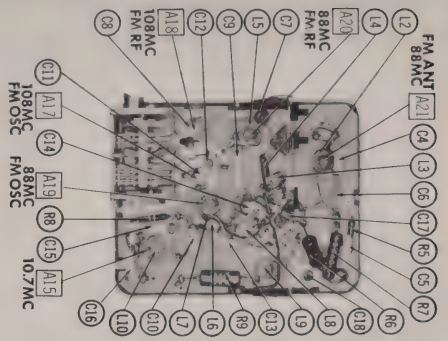
ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	350			B0436	FP229.2		TVL-2760	
B	50	350			BR5035	TC79		TVA-1713	
C	4	350							
C2	4	70		PRS1400	NLW4-150	TT80X4	MLV5-100	TE-1403	
C3	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	15 N075 5%					*		
C5	36 N075 5%					*		
C6	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-210	5HK-D20
C7	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C8	1.3-9.3							
C9	68 N075 5%					*		
C10	15 N075 5%					*		
C11	.5-4							
C12	20 N110 5%					*		
C13	15 N075 5%					*		
C14	47 N470 5%					*		
C15	91 N075 5%					*		
C16	10 N075 5%					*		
C17	.0047							
C18	.0047							
C19	560		SI 560	D6-561	L10T56	CCD-561	B-356	10TS-T56
C20	.001 5%				5R5D1	CM-19B-102J	MCJ255	MS-21
C21	3-30							
C22	.0039 10%				PM6D4	CCD-392	GP239	10TS-D39
C23	3-30							
C24	39 N075 5%					*		
C25	.0047 5%				1R5D47	CM-20B-472J	MCJ464	MS-247
C26	3-30							
C27	15 N750 5%		N750-SI 15	TCN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C28	3-30							
C29	6 5%				C10V6C			
C30	375		SI 390	D6-391	L10T39	CCD-391	B-339	10TS-T39
C31	47 10%		NPO-DI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C32	150 2.5%					CM-15E-151G	MCE236	
C33	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C34	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C35	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C36	.0082			DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C37	120 10%		NPO-SI 120	D6-121	L10T12	CCD-121	GP312	10TS-T12
C38	.0082			DD-822	DPMS6D82	CCD-822	B-282	6PS-D82
C39	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C40	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C41	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C42	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C43	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C44	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C45	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C46	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C47	.047 250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C48	.015 500V		P688N-015	DD6-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C49	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C50	.0033 500V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-623	6TM-D33

FM RF SUBCHASSIS



FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C51	.0033 500V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-623	6TM-D33
C52	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C53	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C54	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C55	560 10%			D6-561	5R5T56	CCD-561	GP356	10TS-T56
C56	220 10%		NPO-SI 220	D6-221	L10T22	CCD-221	GP322	10TS-T22
C57	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C58	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C59	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C60	.0033 500V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C61	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C62	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C63	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C64	.068 500V		P688N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C65	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C66	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C67	560 10%			D6-561	5R5T56	CCD-561	GP356	10TS-T56
C68	220 10%		NPO-SI 220	D6-221	L10T22	CCD-221	GP322	10TS-T22
C69	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C70	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C71	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C72	.033 250V		P488N-033	DD-303	CUB4S33	4DP-3-333	GEM-4133	4TM-S33
C73	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C74	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C75	.068 500V		P688N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C76	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2.2meg*		7801-288					Volume, Left Channel
B	2.2meg*							Volume, Right Channel
R2A	10meg		7806-290					Bass, Right Channel
B	10meg							Bass, Left Channel
R3A	1meg		7806-291					Treble, Left Channel
B	1meg							Treble, Right Channel
R4	500Ω	1/4	7801-303					Stereo Balance

* Taps @ 300K & 2meg.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	1meg			
R6	1000Ω			
R7	150Ω			
R8	330K			
R9	15K 1W			
R10	6800Ω			
R11	1meg			
R12	2700Ω			
R13	33K 1W			
R14	100Ω			
R15	33K			
R16	120Ω			
R17	10Ω			
R18	1meg			
R19	1000Ω			
R20	56K			
R21	2.2meg			
R22	150K			
R23	330K			
R24	22K			
R25	4700Ω			
R26	22K			
R27	470K			
R28	2.2meg			
R29	2.2meg			
R30	12K			
R31	12K			
R32	220K			
R33	220K			
R34	220K			
R35	220K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R36	330K			
R37	220K			
R38	220K			
R39	18K			
R40	22meg			
R41	2.7meg			
R42	330K			
R43	150Ω			
R44	10meg			
R45	3.3meg			
R46	470K			
R47	47K			
R48	1.8meg			
R49	180Ω			
R50	22K			
R51	5600Ω			
R52	330K			
R53	220K			
R54	18K			
R55	22meg			
R56	330K			
R57	150Ω			
R58	47K			
R59	1.8meg			
R60	22K			
R61	5600Ω			
R62	27K			
R63	1300Ω 3W	PW3-1300	3W-SQ-1300	
R64	33K 1W			
R65	1800Ω			
R66	1800Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant. Matching	9238-065					① Wound On 100Ω
L2	FM Ant.	9231-027					② Part #HFBV1681 used in Models SO11U, SO12U
L3	RF Choke	BV1975					
L4	RF Choke	BV1956 ①					
L5	FM RF	9226-037					
L6	RF Choke	BV1976					
L7	FM Osc.	9226-038					
L8	RF Choke	BV1960					
L9	FM Mixer Plate	9226-032					
L10	1st FM IF	9226-033					
L11	SW Ant.	9232-001					
L12	460KC IF Trap	9208-057					
L13	Loopstick	9233-054	BC-419	705-A		T532	
L14	RF Choke	9208-001					
L15	SW Osc.	9232-002					
L16	BC Osc.	9208-102 ②					
L17A	2nd FM IF	7207-348					
B	1st AM IF						
L18A	Ratio Detector	7207-328					
B	2nd AM IF						
L19	Tone Choke	9238-060					
L20	Tone Choke	9238-059					
L21	Tone Choke	9238-051					
L22	Tone Choke	9238-051					
L23	Tone Choke	9238-059					
L24	Tone Choke	9238-060					

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	220V Tap @115V-117V @ 53A	220V @ .140A AC	6.3V @ 3A	9078-072 ①					① Models SO Series use Part #9078-075

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6800Ω CT	1-2Ω		9060-081 ①					① Part #9060-082 used in Models SO Series. ② Part #9038-040 used in Models SO Series.
			4Ω						
T3	5100Ω	3-4Ω		9038-039 ②					
T4	5100Ω	3-4Ω		9038-039 ②					

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	7010-001	5A07	* Part #7048-005 Used in Models SO Series.
SP2	7"x 11"	PM	1-2Ω	7048-004*		
SP3	5"	PM	3-4Ω	7010-001	5A07	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Grundig Majestic PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.080A	B250C75	1N1763 †	F6 †	† Silicon Type, 4 Required

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Grundig Majestic PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M2		6/10A * 125V S/B						

* 3/10A @ 250V S/B used when AC input voltage is 220V.

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M3	FM Tuner		Complete
M4	Tuning Cap.	9653-010	2 Gang
M5	Switch		Function (Pushbutton Type)
M6	Switch	1165-065	Mono-Stereo (Slide Type, Lever Operated)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Scale	2158-175	Dial, Model SO2U
Scale	2155-175	Dial, Model SO11U, SO12U
Pointer	1080-057	FM Dial
Knob	9616-813	Mono-Stereo, Switch, Model SO2U
Knob	9616-142	Mono-Stereo, Switch, Models SO11U, SO12U
Knob	9616-138	Tuning, Models SO11U, SO12U
Knob	9616-825	Tuning, Model SO2U
Knob	9616-833	Volume, Tuning, Model SO2U
Knob	9616-154	Volume, Tuning, Models SO11U, SO12U
Cabinet	2158-011	Model SO2U
Cabinet	2155-011	Model SO11U
Cabinet	2156-011	Model SO12U
Leg	2158-005	Cabinet, Model SO2U
Leg	2068-008	Cabinet, Model SO11U
Leg	2068-007	Cabinet, Model SO12U

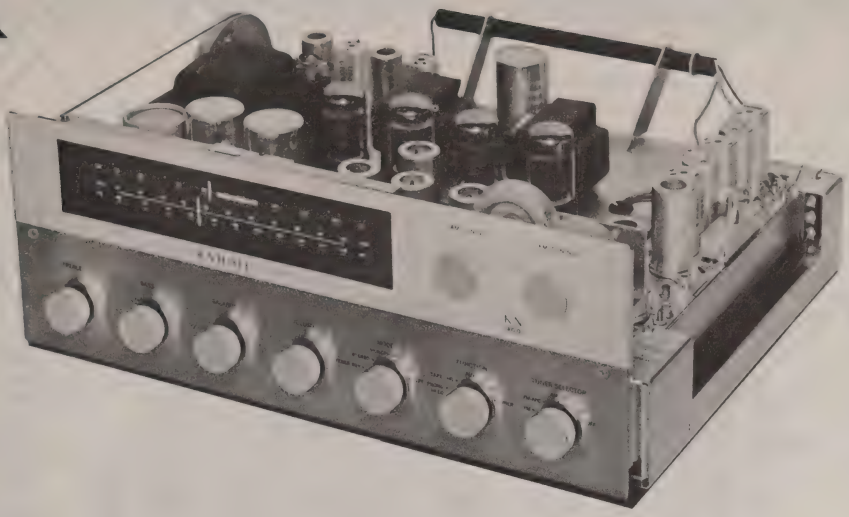
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

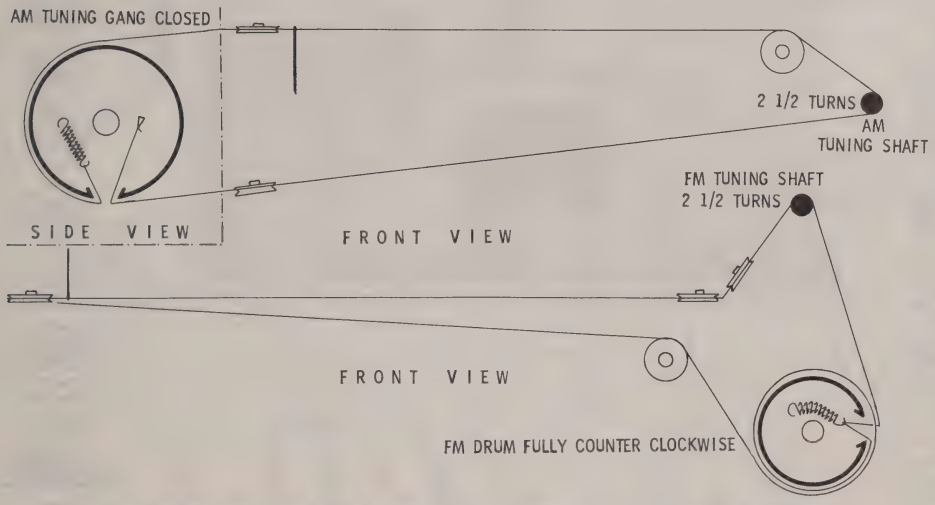
**KNIGHT MODEL
KN-300 (35DU781)**



KNIGHT MODEL
KN-300 (35DU781)

TRADE NAME	Knight Model KN-300 (35DU781)		
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois		
TYPE SET	AC Operated 16 Tube FM-AM Receiver with Stereo Amplifier		
POWER SUPPLY	105 – 125 Volts AC, 50-60 Cycles	RATING	125 Watts, 1.3 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



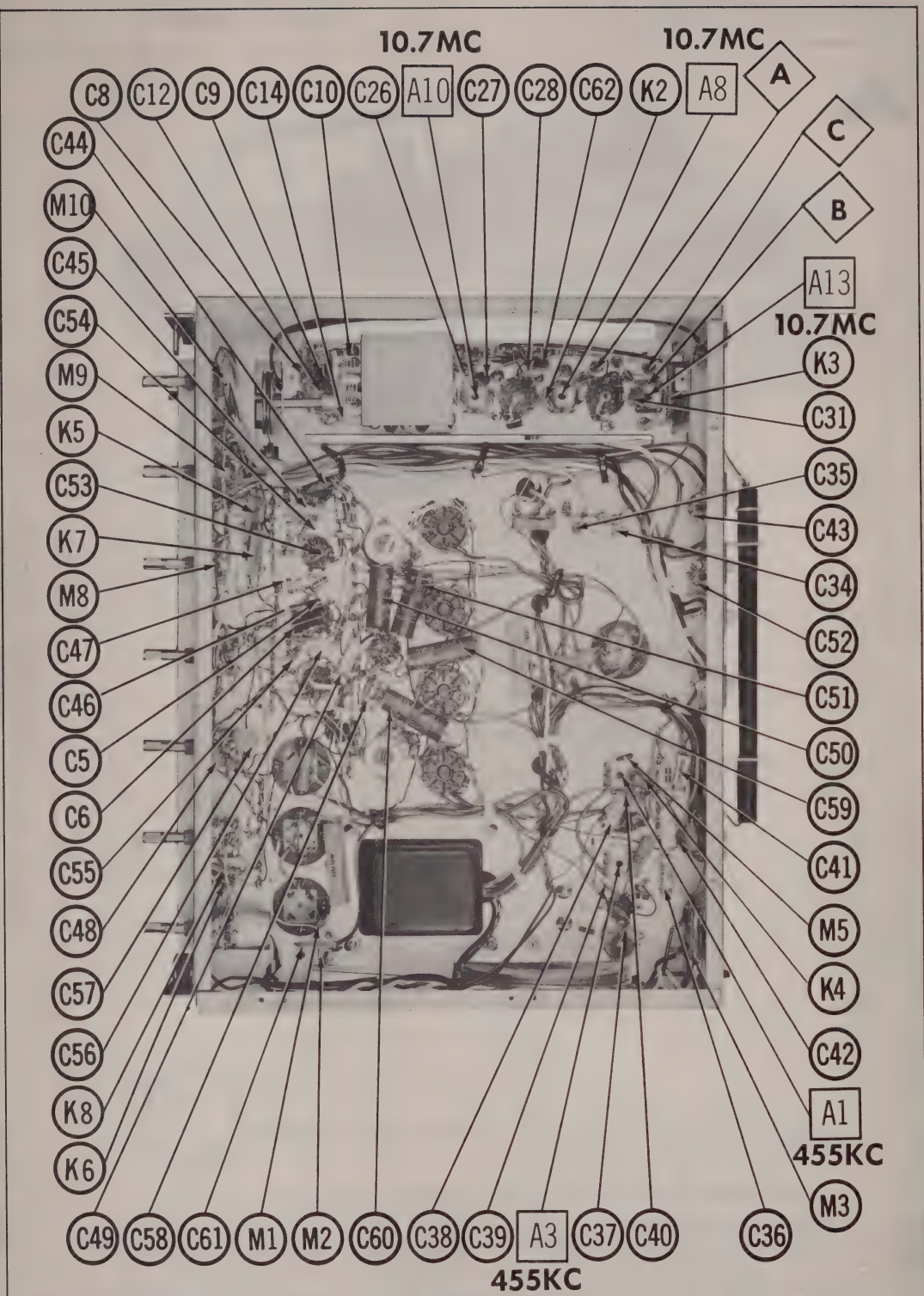
KNIGHT MODEL
KN-300 (35DU781)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KK725

SET 551 FOLDER 7



CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4, A7 thru A14.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A15, A16.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A17, A18.....GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to AM antenna terminal. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1400KC	1400KC	"	A5, A6	"
3.	"	600KC	600KC	"	A7	Adjust for maximum output. Repeat Step 2.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side to an ungrounded tube shield over FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A13	"
5.	"	"	"	DC probe to point (C). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side to an ungrounded tube shield over FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A8, A9, A10, A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 47K to point (B). Low side to chassis.	A13	"
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A14	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	106MC (Unmod.)	(FM) 106MC	DC probe to point (A). Common to chassis.	A15, A16	Adjust for maximum deflection.
8.	"	90MC	90MC	"	A17, A18	"

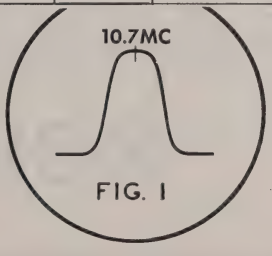


FIG. 1

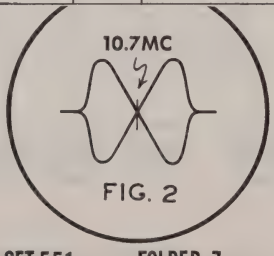
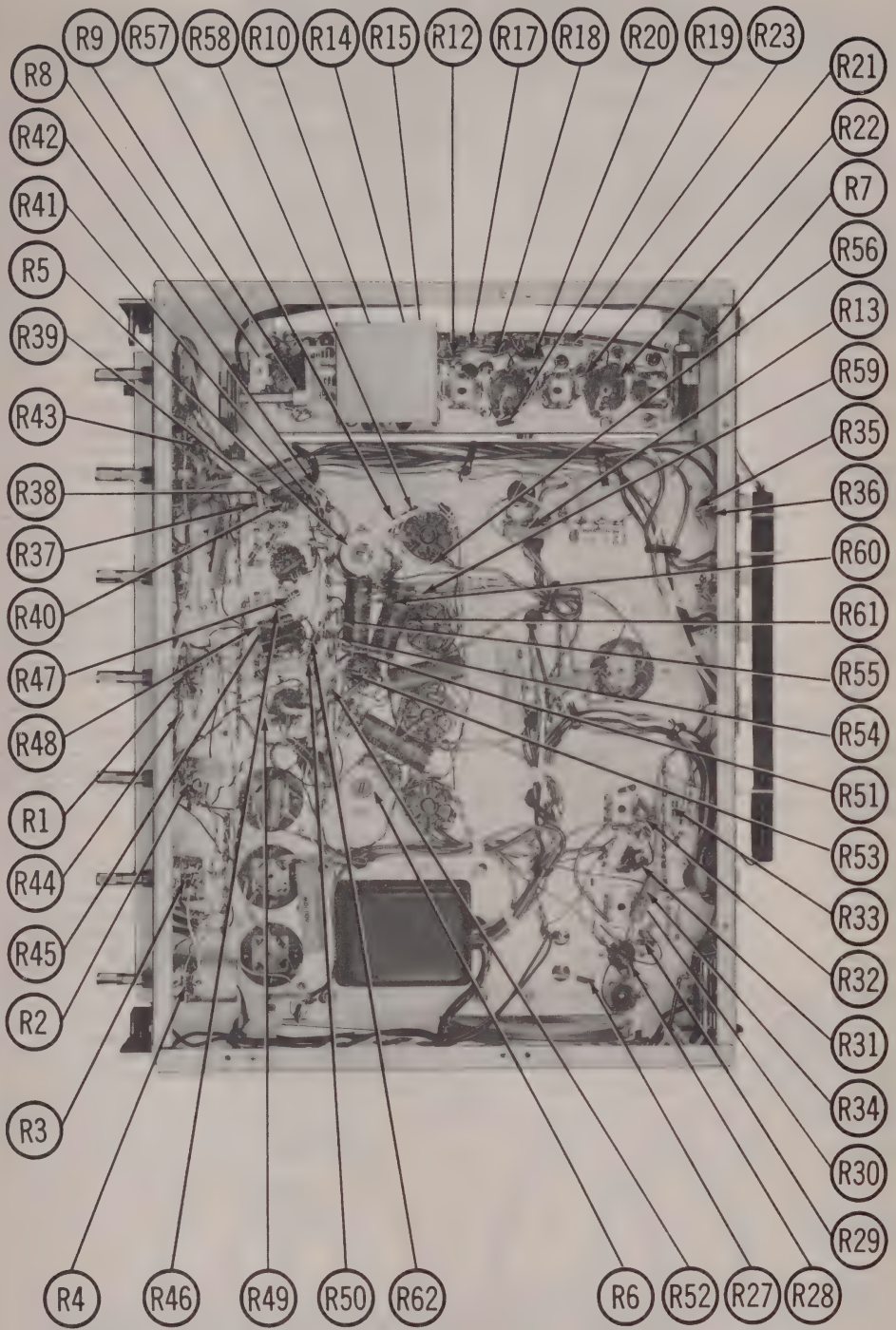
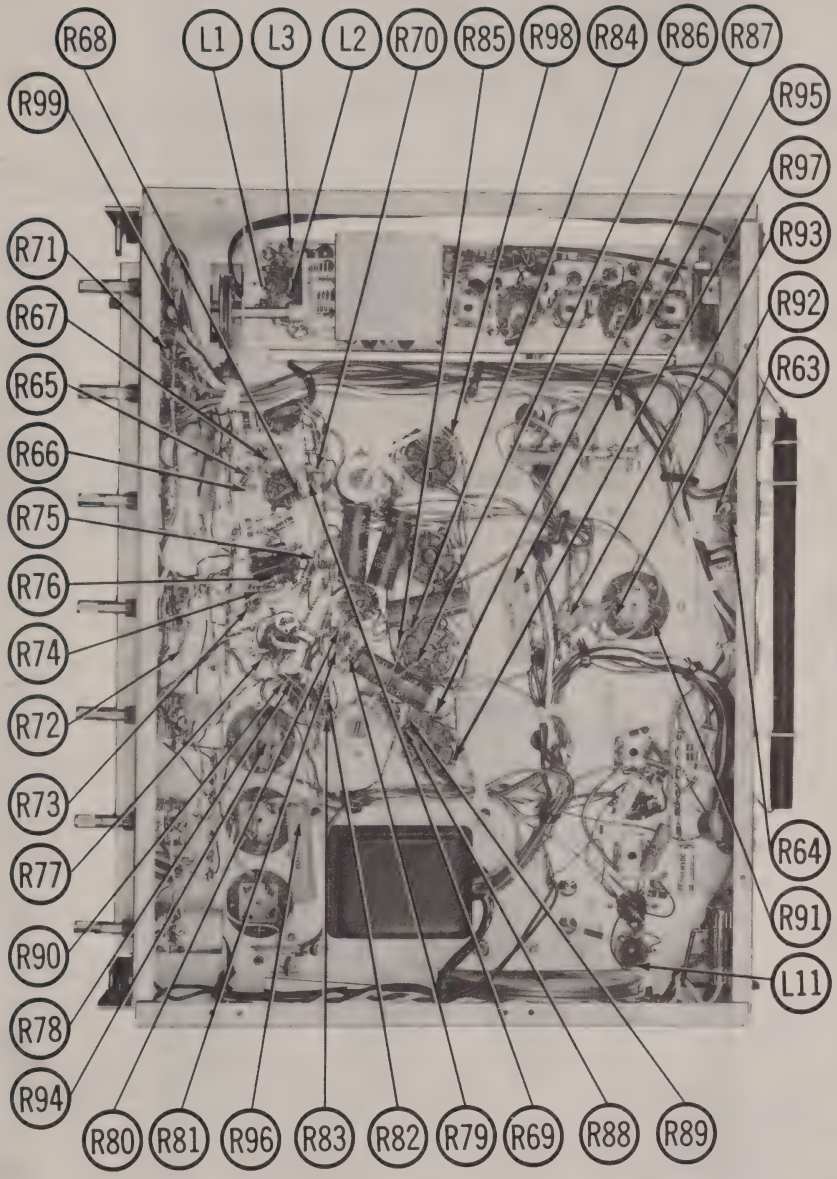


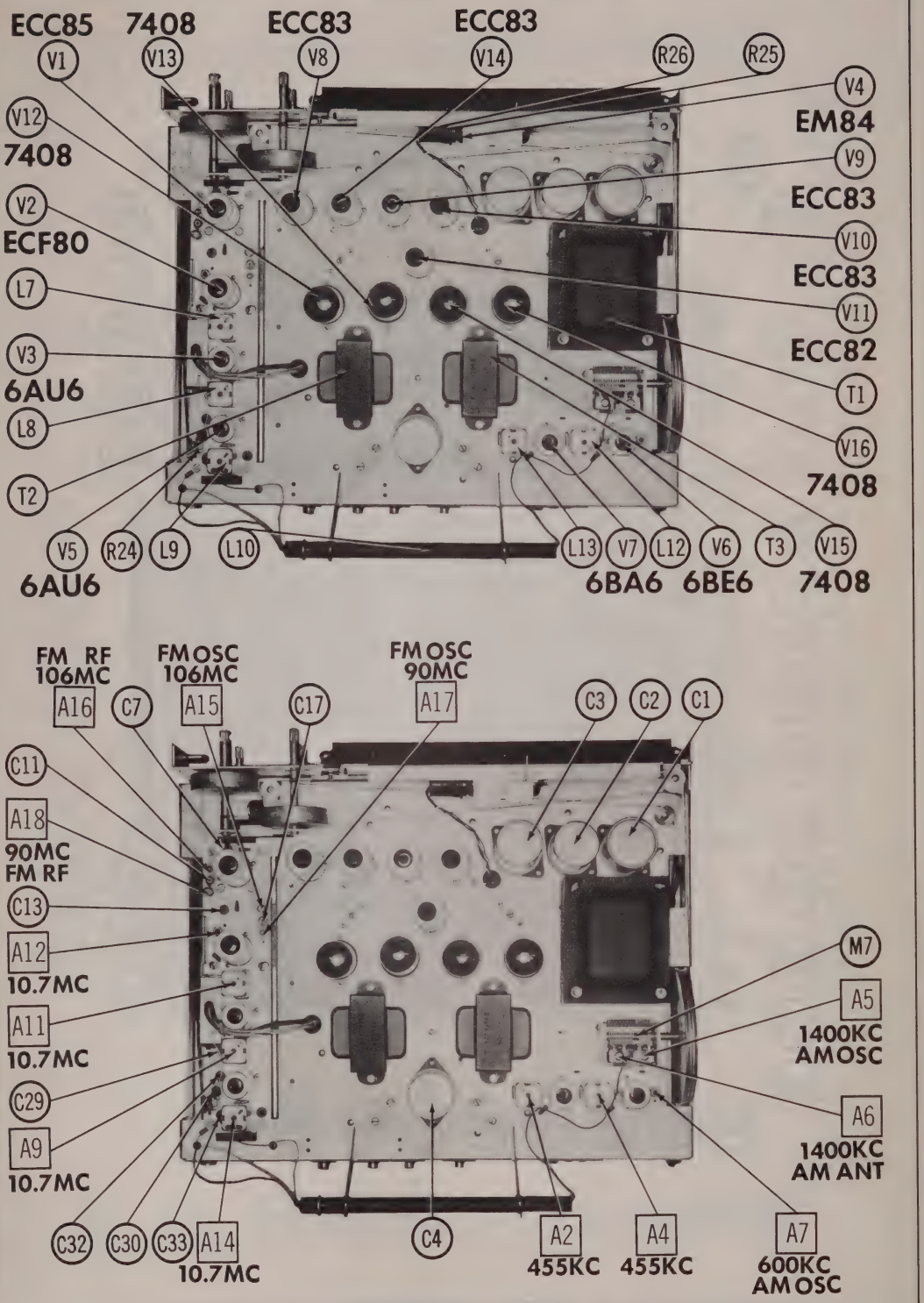
FIG. 2



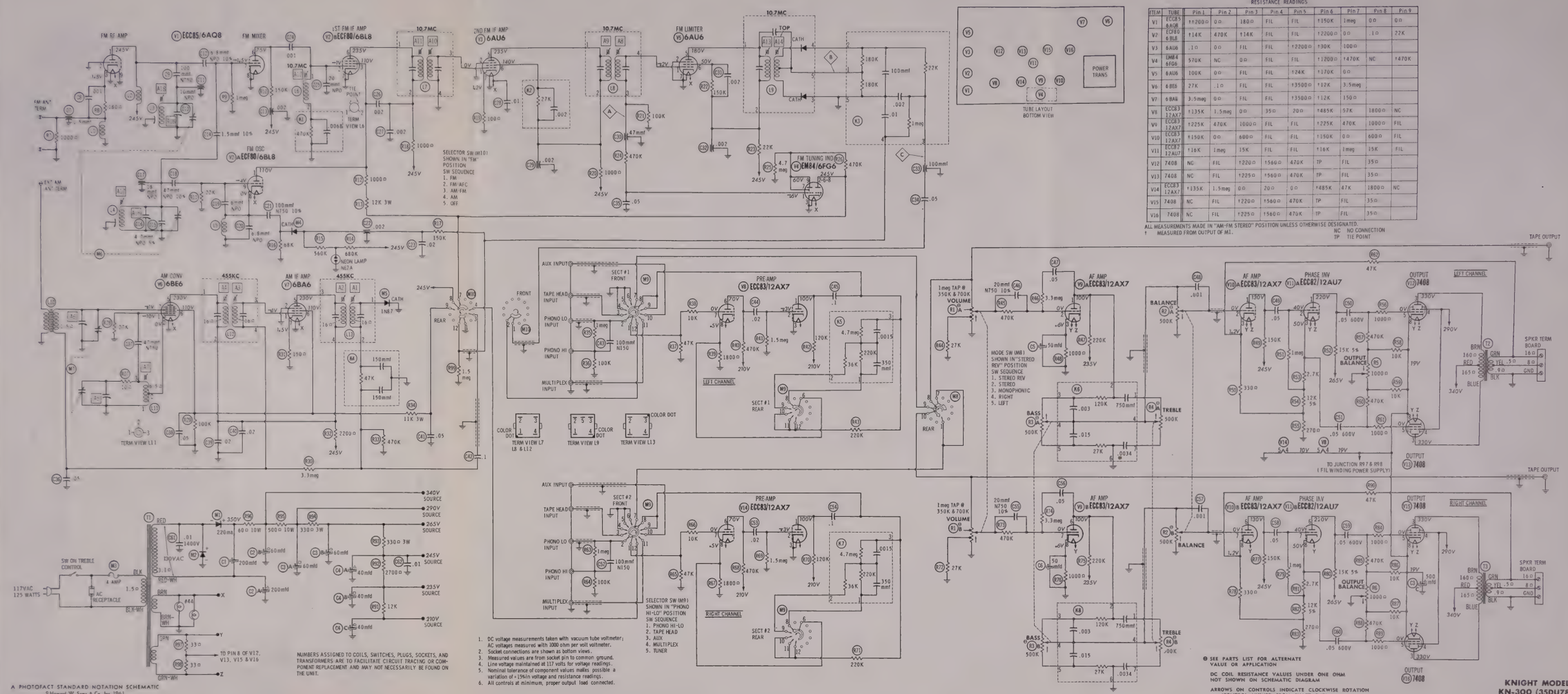
CHASSIS BOTTOM VIEW — RESISTOR IDENT.



CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.



CHASSIS TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†12000Ω	0Ω	180Ω	FIL	FIL	†150K	1meg	0Ω	
V2	ECF80 6BL8	†14K	470K	†14K	FIL	FIL	†2200Ω	0Ω	.1Ω	22K
V3	6AU6	.1Ω	0Ω	FIL	FIL	†2200Ω	†30K	100Ω		
V4	EM84 6FG6	570K	NC	0Ω	FIL	FIL	†1200Ω	†470K	NC	†470K
V5	6AU6	100K	0Ω	FIL	FIL	†24K	†170K	0Ω		
V6	6BE6	27K	.1Ω	FIL	FIL	†3500Ω	†12K	3.5meg		
V7	6BA6	3.5meg	0Ω	FIL	FIL	†3500Ω	†12K	150Ω		
V8	ECC83 12AX7	†135K	1.5meg	0Ω	35Ω	20Ω	†485K	57K	1800Ω	NC
V9	ECC83 12AX7	†225K	470K	1000Ω	FIL	FIL	†225K	470K	1000Ω	FIL
V10	ECC83 12AX7	†150K	0Ω	600Ω	FIL	FIL	†150K	0Ω	600Ω	FIL
V11	ECC82 12AU7	†16K	1meg	15K	FIL	FIL	†16K	1meg	15K	FIL
V12	7408	NC	FIL	†220Ω	†560Ω	470K	TP	FIL	35Ω	
V13	7408	NC	FIL	†225Ω	†560Ω	470K	TP	FIL	35Ω	
V14	ECC83 12AX7	†135K	1.5meg	0Ω	20Ω	0Ω	†485K	47K	1800Ω	NC
V15	7408	NC	FIL	†220Ω	†560Ω	470K	TP	FIL	35Ω	
V16	7408	NC	FIL	†225Ω	†560Ω	470K	TP	FIL	35Ω	

ALL MEASUREMENTS MADE IN "AM-FM STEREO" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. -FM Mixer	ECC85/6AQ8
V2	FM Osc. -1st FM IF Amp.	ECF80/6BL8
V3	2nd FM IF Amplifier	6AU6
V4	FM Tuning Indicator	EM84/6FG6
V5	FM Limiter	6AU6
V6	AM Converter	6BE6
V7	AM IF Amplifier	6BA6
V8	Left Channel Preamp.	ECC83/12AX7
V9	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V10	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V11	Left Channel Phase Inv. - Right Channel Phase Inv.	ECC82/12AU7
V12	Left Channel Output	7408
V13	Left Channel Output	7408
V14	Right Channel Preamp.	ECC83/12AX7
V15	Right Channel Output	7408
V16	Right Channel Output	7408

ELECTROLYTIC CAPACITORS

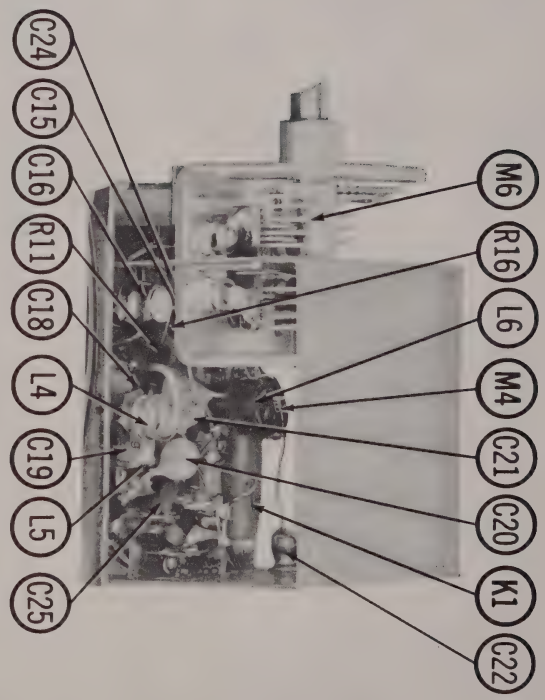
ITEM No.	RATING CAP.	RATING VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	200	200	JE3163839		XA0318	WP132		TVA-1480	
C2A	▲200	200	JE3163905	AFH3-114-80	XA0318	WP132		TVL-1730	
B	▲60	350			BR6035	TC68		TVA-1480	
C3A	■60	350	JE3423997	AFH2-59	B0326	FP330. 23	TMD-2655	TVL-2677	
B	▲60	350		PRS1290	BR5002		TD-500-25	TVA-1209	
C	▲500	25							
C4A	▲40	350	JE3163841	AFH4-53	B0450	WP420. 34	TMD-2390	TVLS3639.14*	
B	■40	350			BR4035		TD-40-350		
C	▲40	350							
C5	50	6		PTT29	NLW50-10	TT6X50	MLV50-6	TE-1100	
C6	50	6		PTT29	NLW50-10	TT6X50	MLV50-6	TE-1100	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	1.5							
C8	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C10								
C11	10 NPO							
C12	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C13	.002		EF-001	MFT-1000		CCF-102	CT280A	
C14	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-510	10TCC-V15
C15	4.7 NPO 5%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C16								
C17	18 NPO							
C18	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C19	6 NPO				C10V6C			
C20	6.8 NPO		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C21	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C22	.002		EF-001	MFT-1000		CCF-102	CT280A	
C23	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C24	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C25	20 NPO		NPO-DI 20	DTZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C26	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C27	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C28	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FM RF SUBCHASSIS



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C29	.002		EF-001	MFT-1000		CCF-102	CT280A	
C30	47							
C31	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C32	.002		EF-001	MFT-1000		CCF-102	CT280A	
C33	100		EF-0001	MFT-100				
C34	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C35	.05 100V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S50
C36	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C37	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C38	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C39	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C40	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C41	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C42	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C43	100 N150					*		10TCP-T10
C44	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C45	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C46	20 N750 10%		N750-DI 20	DTN-20	C10Q2U	CCTN-200	CN7-420	10TCU-Q20
C47	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C48	.001	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C49	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C50	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C51	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C52	100 N150					*		10TCP-T10
C53	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C54	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C55	20 N750 10%		N750-DI 20	DTN-20	C10Q20U	CCTN-200	CN7-420	10TCU-Q20
C56	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C57	.001	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C58	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C59	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C60	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S50
C61	.01 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C62	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg*		RV3674381①					Volume, Left Channel
B	1meg*							Volume, Right Channel
R2A	500K		RV3674383②	B-60			FA55A	Balance, Left Channel
B	500K			SR-613			RU55R	Balance, Right Channel
C	Shaft			Not Req.			CS3500	
R3A	500K		RV3674379③	B-60	AD47-500K-Z		FA55A	Bass, Left Channel
B	500K			SR-60	Not Req.		RU55A	Bass, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	500K		RV3674380④	B-60	AD47-500K-Z		FA55A	Treble, Left Channel
B	500K			SR-60	Not Req.		RU55A	Treble, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	
R5A	1000Ω		RV2783331			B11-108	TA13L	Output Balance, Left Channel
B	Shaft					TM4	Not Req.	
R6A	1000Ω		RV2783331			B11-108	TA13L	Output Balance, Right Channel
B	Shaft					TM4	Not Req.	

* Taps ⓐ 350K & 700K.
① Some versions may use Part #RV3674342 (No Taps)
② Some versions may use Part #RV3674340
③ Some versions may use Part #RV3674339.
④ Some versions may use Part #RV3674341.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	1000Ω				R54	12K 5%			
R8	180Ω				R55	270Ω			
R9	1meg				R56	1000Ω			
R10	150K				R57	470K			
R11	22K				R58	10K			
R12	1000Ω				R59	10K			
R13	12K 3W	PW3-12K	3W-SQ-12K		R60	470K			
R14	680K				R61	1000Ω			
R15	560K				R62	47K			
R16	68K				R63	1meg			
R17	150K				R64	100K			
R18	1000Ω				R65	47K			
R19	100Ω				R66	10K			
R20	1000Ω				R67	1800Ω			
R21	100K				R68	470K			
R22	150K				R69	1.5meg			
R23	22K				R70	120K			
R24	470K				R71	220K			
R25	4.7meg				R72	27K			
R26	470K				R73	470K			
R27	10Ω				R74	3.3meg			
R28	27K				R75	220K			
R29	100K				R76	1000Ω			
R30	3.3meg				R77	150K			
R31	150Ω				R78	330Ω			
R32	2200Ω				R79	1meg			
R33	470K				R80	15K 5%			
R34	11K 3W	PW3-11K	3W-SQ-11K		R81	2700Ω			
R35	1meg				R82	12K 5%			
R36	100K				R83	270Ω			
R37	47K				R84	1000Ω			
R38	10K				R85	470K			
R39	1800Ω				R86	10K			
R40	470K				R87	10K			
R41	1.5meg				R88	470K			
R42	120K				R89	1000Ω			
R43	220K				R90	47K			
R44	27K				R91	12K			
R45	470K				R92	2700Ω			
R46	3.3meg				R93	330Ω 3W	PW3-330	3W-SQ-330	
R47	220K				R94	330Ω 3W	PW3-330	3W-SQ-330	
R48	1000Ω				R95	500Ω 10W	PW10-500	10W-SQ-500	
R49	150K				R96	60Ω 10W	PW10-60	10W-SQ-60	
R50	330Ω				R97	33Ω			
R51	1meg				R98	33Ω			
R52	15K 5%				R99	1.5meg			
R53	2700Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		KNIGHT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke (.24uh)			4584	RTC-8512	T957	
L2	RF Choke (4.7uh)		SW-631	4609	RTC-8519	T819	
L3	FM RF	GL3634216					
L4	FM Osc.	GL3634217					
L5	RF Choke (1uh)		BC-561	4602	RTC-8515	T855	
L6	1st FM IF	GL3634212					
L7	2nd FM IF	GT3634213	FM-254	1463	RTC-8599	T633	
L8	3rd FM IF	GT3634214	FM-254	1463	RTC-8599	T633	
L9	Discriminator	GT3634385	FM-253▲	1464▲	RTC-8665▲	T634▲	▲ Connect 2 crys. ext.
L10	Loopstick	GL3424083	BC-418	705-A		T532	
L11	AM Osc.	GL3484026	BC-393	70-OSC	RTC-8647	T512	
L12	1st AM IF	GTCOM4152	BC-352	12-C1	RTC-8632	T607	
L13	2nd AM IF	GTCOM4153	BC-353	12-C2	RTC-8633	T608	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ 1.3A	130V Ⓐ .750A AC	6.3V Ⓐ 3A	FT3423995F					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V Ⓐ 2.6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KNIGHT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω CT	16Ω Tap Ⓐ 8Ω	FT3423996B					
T3	6200Ω CT	16Ω Tap Ⓐ 8Ω	FT3423996B					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	KNIGHT PART No.	REPLACEMENT DATA
K1	1st FM IF Coil	.0068mfd, 470K	PC3634229	
K2	2nd FM IF Screen	.002mfd, 27K	PC3634228	
K3	Discriminator Network	100mmf, .002mfd, .01mfd, 22K, 180K, 180K, 1meg	PC3634227	
K4	AM Diode Filter	150mmf, 150mmf, 47K	PC781599	Aerovox PA-98 Centralab PC-51 Sprague D-2
K5	Function Sw. Network	350mmf, .0015mfd, 36K, 220K, 4.7meg	PCCOM4151	
K6	Tone. Comp.	750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K	PC2492902	
K7	Function Sw. Network	350mmf, .0015mfd, 36K, 220K, 4.7meg	PCCOM4151	
K8	Tone. Comp.	750mmf, .003mfd, .0034mfd, .015mfd, 27K, 120K	PC2492902	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	KNIGHT PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M1	.220A	Z3424114	1N1763 ♦	F-6 ♦	♦ Add 5.5Ω surge limiter
M2	.220A	Z3424114	1N1763 ♦	F-6 ♦	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	4A			312004 (3AG 4A)	357001	MTH-4	4405

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		KNIGHT PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M4	1N87	Z3414150	1N60	1N60	AFC Diode
M5		Z2923361			AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M6	Tuning Gang	JV3414186	FM
M7	Tuning Gang	JVCOM4041	AM (Ant. 20-375mmf, Osc. 20-128mmf)
M8	Switch	ER3674338	Mode (Rotary-Wafer)
M9	Switch	ER3674337	Amp. Function (Rotary - Wafer)
M10	Switch	ER3674336	Tuner Selector (Rotary - Wafer)

WIRING DATA

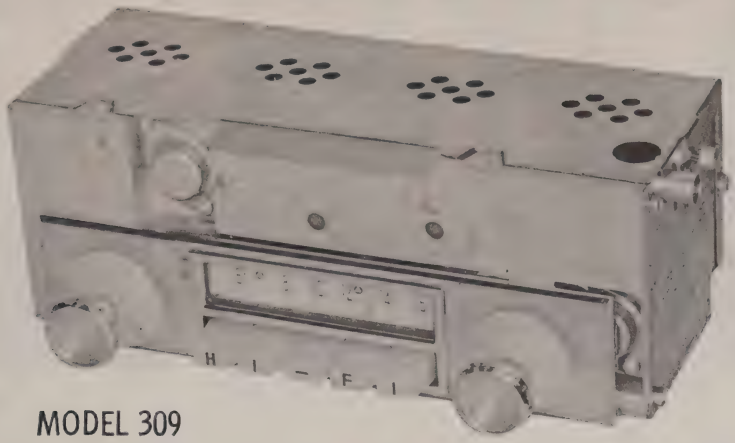
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

MOPAR MODELS 309, 311, 314L, 314V

MOPAR MODELS
309, 311, 314L, 314V



MODEL 309

TRADE NAME	Mopar Models	309 (For 1961 Plymouth RP1, RP2) 311 (For 1961 Plymouth RP1, RP2 Export Versions) 314L (For 1961 Lancer RW1 Export Versions) 314V (For 1961 Valiant RV1 Export Versions)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois	
TYPE SET	Battery Operated 4 Tube-3 Transistor Custom Built Automobile AM Receiver	
POWER SUPPLY	12 Volt Storage Battery	RATING 1.7 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #8271, 8279, 8897, 9050-L, 9150
WALSCO #2521, 2524
A8, A9, A10....GENERAL CEMENT #8271, 8279, 8897
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Antenna receptacle thru .1mfd. Low side to chassis.	262.5KC (400∿ Mod.)	High end stop.	Across Voice Coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or components replaced. If necessary, back tuning cores (A8, A9, A10) out of coils. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1020KC	Tuner carriage 9/16" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

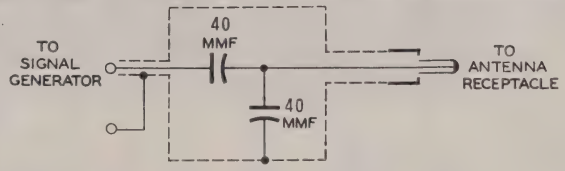


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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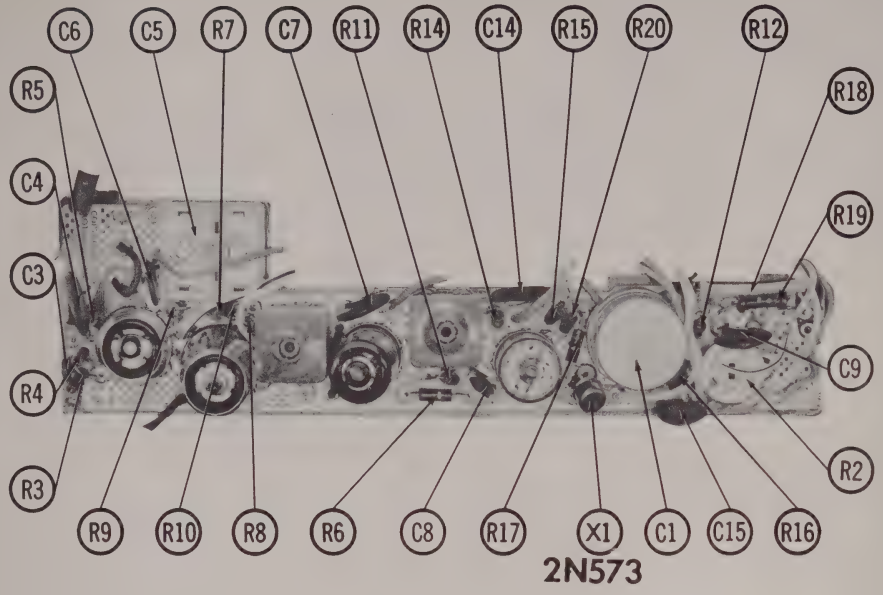
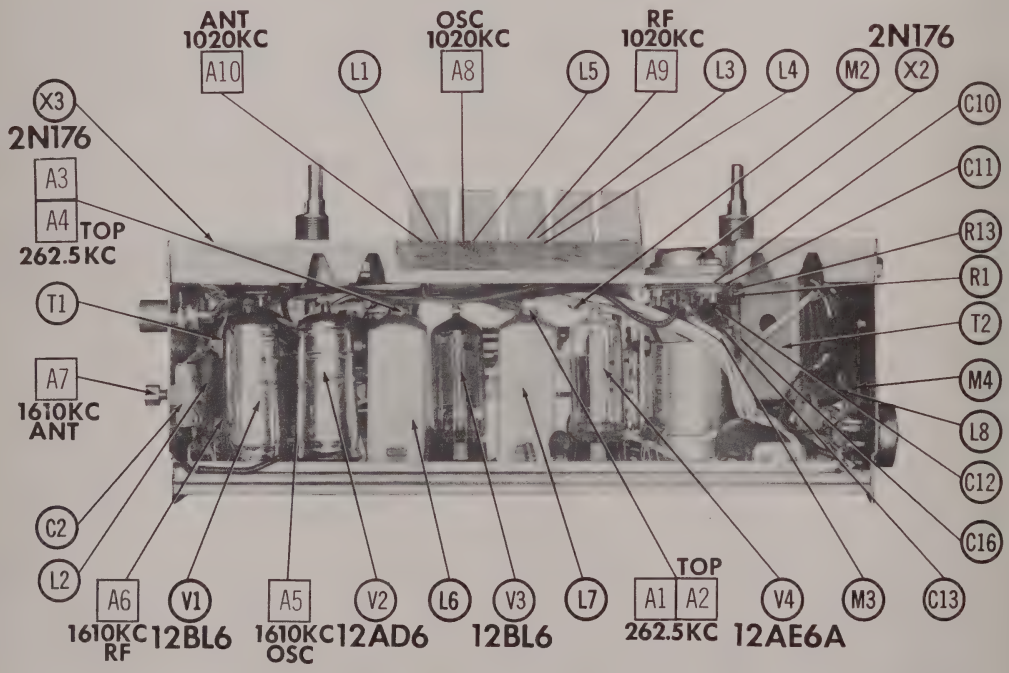
KD823

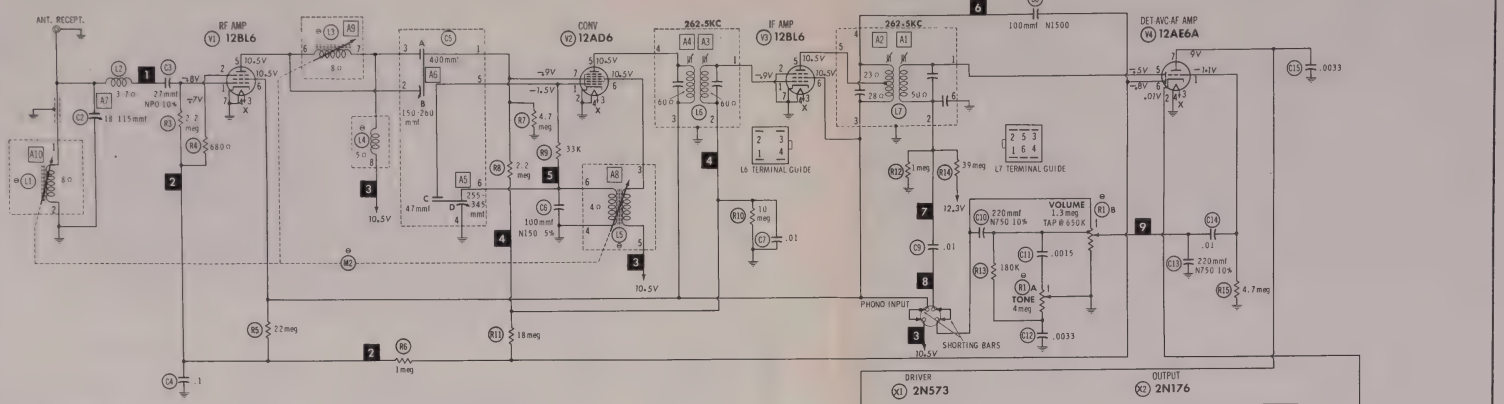
SET 551 FOLDER 8



PRINTED BOARD - TOP VIEW



CHASSIS - END VIEW

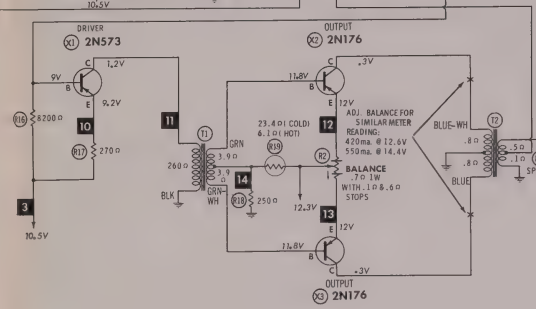


C5 TERMINAL GUIDE

L1 & L3 THRU L5 TERMINAL GUIDE

TRANSISTOR (X1) TERMINAL GUIDE

TRANSISTORS (X2 & X3) TERMINAL GUIDE


DRIVER X1 2N573
OUTPUT X2 2N176
OUTPUT X3 2N176
ADJ. BALANCE FOR SIMILAR METER READING: 420ma. @ 12.6V 550ma. @ 14.4V
BALANCE 70 1W WITH .1Ω & .6Ω STOPS
SPARK PLUG
6" x 9"
10.5V

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	15meg	13meg	4Ω	0Ω	285Ω	270Ω	0Ω
V2	12AD6	33K	0Ω	4Ω	0Ω	310Ω	270Ω	3.3meg
V3	12BL6	4meg	0Ω	0Ω	4Ω	300Ω	270Ω	0Ω
V4	12AE6A	4.7meg	.1Ω	0Ω	4Ω	1meg	12meg	

TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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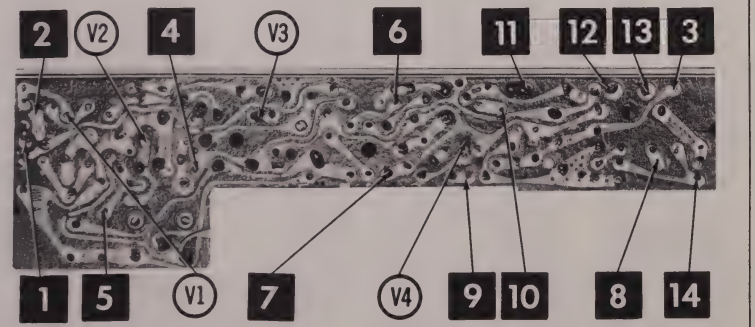
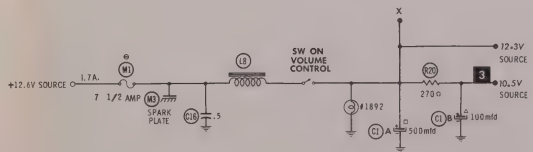


A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOPAR MODELS 309, 311, 314L, 314V

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC)	ITEM No.	USE	TYPE (RAYTHEON / SYLVANIA)
V1	RF Amplifier	12BL6	V3	IF Amplifier	12BL6
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12AE6A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: RAYTHEON PART No.	NOTES
X1	2N573	Driver	2N591	2N573	PNP
X2	2N176	Output	2N176		PNP Note 1
X3	2N176	Output	2N176		PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to both sides of insulator. Tighten mounting screws securely. Check Balance adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■500	16	23C40302A01	PWH2-02-11				PCLS-2175 *	
B	▲100	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	18-115	#20K542026				463		
C3	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C4	.1			DPA-104	H-05P1	IDP-2-104	TA-010	TG-P10
C5A	400							
B	150-260	#20B563377						
C	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
D	255-345							
C6	100 N150 5%	#21R129899				*		10TCP-T10
C7	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	100 N1500	#21R129848		TCL-100		*		

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	220 N750 10%		N750-DI 220	DTN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C11	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-152	5HK-D15
C12	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C13	220 N750 10%		N750-DI 220	DTN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C14	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	.0033		BPD-0033	DD-332	BYA10D3	CCD-332	B-233	5HK-D33
C16	.5 100V		P288N-5		CUB2P5	IDP-4-504	GEM-205	2TM-P50

Motorola Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	4meg	½	18C563338①					Tone
B	1.3meg 650K Tap							Volume
C	Switch							Power Off-On
R2	0.7Ω *	1(WW)	18B562980					Balance

① Some versions may use Part #18K564904.
* Stops ⓐ 0.1Ω and 0.6Ω (Temperature Compensated).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R3	2.2meg			
R4	680Ω			
R5	22meg			
R6	1meg			
R7	4.7meg			
R8	2.2meg			
R9	33K			
R10	10meg			
R11	18meg			
R12	1meg			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R13	480K			
R14	39meg			
R15	4.7meg			
R16	8200Ω			
R17	270Ω			
R18	250Ω			
R19	23.4Ω(coid) 6.1Ω (hot)			Pt. #6K540634
R20	270Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	24B563217					Note 1
L2	RF Choke(31uh)	24K563490	TV-180	6176	RTC-8593	T301	
L3	RF	24B563217					Note 1
L4	Image Trap	24B563694					Note 1
L5	Osc.	24B563214					Note 1
L6	Input IF	24K563462	BC-344	13-PH1	RTC-8644	T655	
L7	Output IF	24D563300	BC-424				

Note 1. Part of Coil and Mounting Plate Assembly Part #1V40300A50.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L8	1.7A	.2Ω	.002HY	25C563446					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.8	1	25C563319					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6Ω CT	3-4Ω Tap ②. 01Ω DC Res.	25C563330					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	50K562405 *	69A3	* Models 309, 311
	6"x 9"	PM	3-4Ω	50D562404 †	69A3	† Models 314L, 314V

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½	65R122346	9K563327 ① 9K564499 ②	30707.5 (SFE 7½A 32V)	155009	SFE 7½	HRH

① Models 309, 311
② Models 314L, 314V.

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40242A02	(AT-327) Complete, Models 309, 311
	Tuner	77D40242A05	(AT-346) Complete, Models 314L, 314V
M3	Spark Plate	64K530177	
M4	Spark Plate	64K530177	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Crystal	61A563192	
Dial Pointer	1K563183	
Dial Scale	34K564633	Model 309
Dial Scale	34K564771	Model 311, 314L, 314V
Knob	36B562625	Tuning, Volume, Model 309, 311
Knob	36C40272A01	Tuning, Volume, Model 314V
Knob	36B40261A01	Tuning, Volume, Model 314L
Knob	36B40063A01	Tone, Dummy, Model 309, 311
Knob	36K564787	Tone, Dummy, Model 314V
Knob	36K564788	Tone, Dummy, Model 314L
Pushbutton	38B40047A04	"F" Model 309, 311
Pushbutton	1B40385A04	"F" Model 314L, 314V
Pushbutton	38B40047A01	"H" Model 309, 311
Pushbutton	1B40385A01	"H" Model 414L, 314V
Pushbutton	38B40047A02	"I" Model 309, 311
Pushbutton	1B40385A02	"I" Model 314L, 314V
Pushbutton	1B40385A03	Plain Model 314L, 314V
Pushbutton	38B40047A03	Plain Model 309, 311

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT® Folder

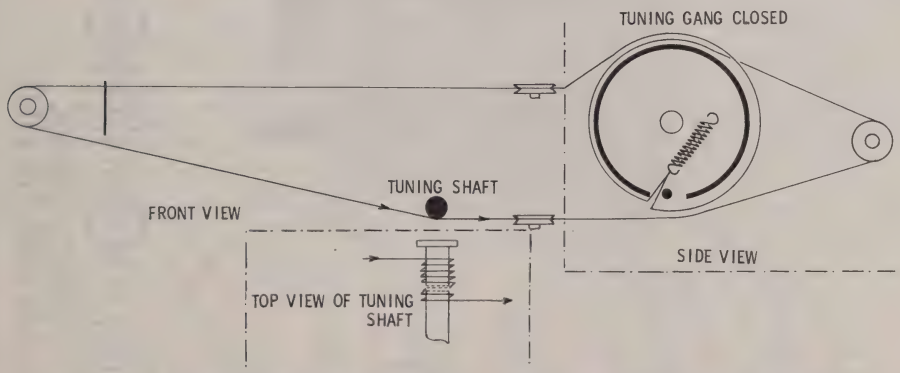
REALISTIC MODEL 90LX695

REALISTIC MODEL 90LX695

REALISTIC MODEL 90LX695

TRADE NAME	Realistic Model 90LX695		
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.		
TYPE SET	AC Operated 6 Tube FM-AM Receiver		
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING	28 Watts, .3 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC.

DIAL CORD STRINGING



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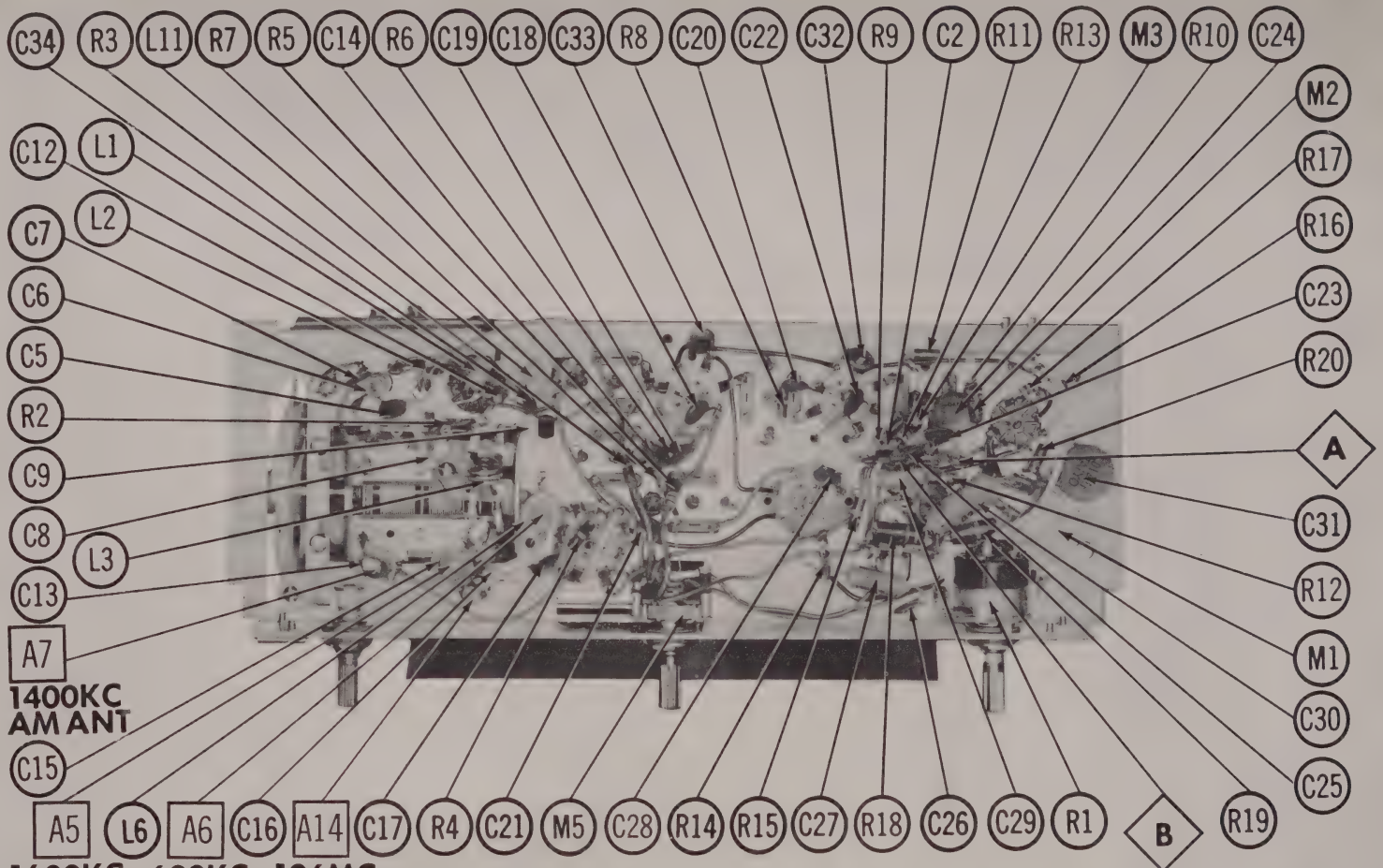
KK686

SET 551 FOLDER 10



CHASSIS BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4, A6, A8 thru A13..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A5, A7, A14, A15..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM – SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum output.
6.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE – SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 150Ω in each lead.	106MC (Unmod.)	(FM) 106MC	DC probe to point Ⓐ. Common to chassis.	A14, A15	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L3, L2	"

FIG. 1

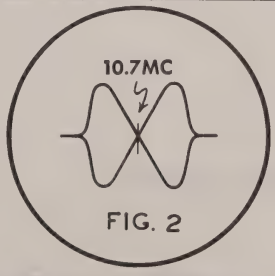
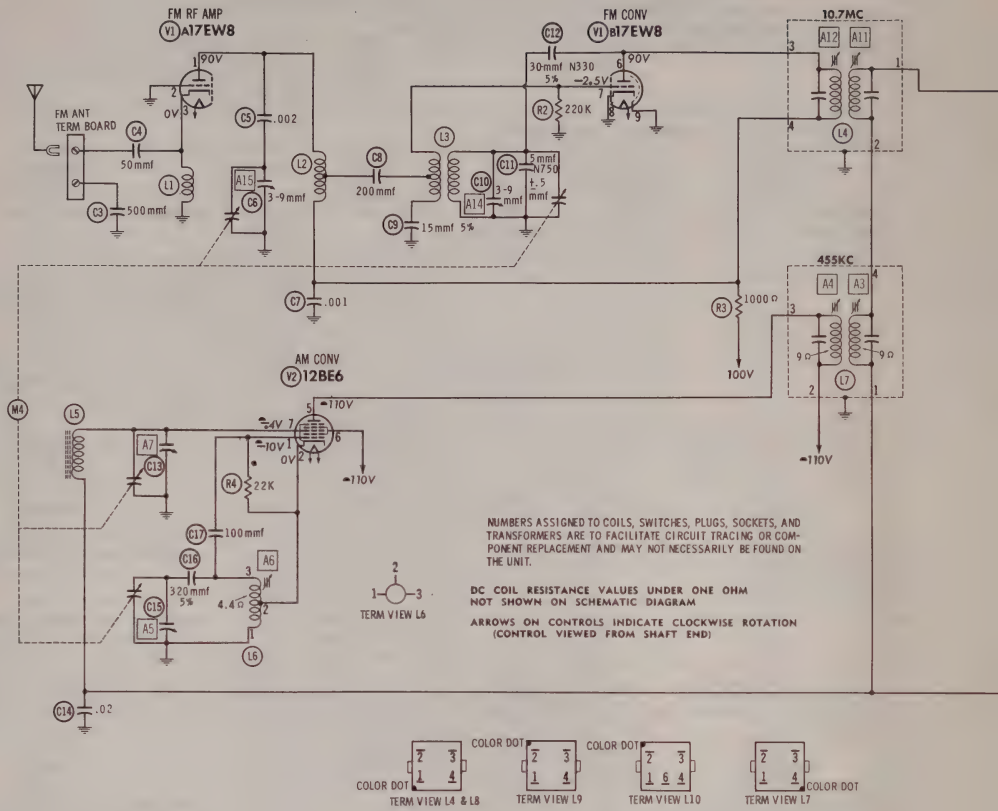


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	17EW8	†1600Ω	0Ω	.1Ω	20Ω	0Ω	†1600Ω	220K	0Ω	0Ω
V2	12BE6	22K	.1Ω	20Ω	35Ω	▬†570Ω	▬†570Ω	3meg		
V3	12BA6	10Ω ▬3meg	0Ω	65Ω	50Ω	†800Ω	†800Ω	82Ω		
V4	12BA6	220K	0Ω	65Ω	80Ω	†800Ω	†800Ω	0Ω		
V5	12AV6	4.7meg	0Ω	35Ω	50Ω	▬500K	0Ω	†220K		
V6	50C5	150Ω	470K	80Ω	130Ω	470K	†570Ω	†300Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▬ MEASURED IN "AM" POSITION. † MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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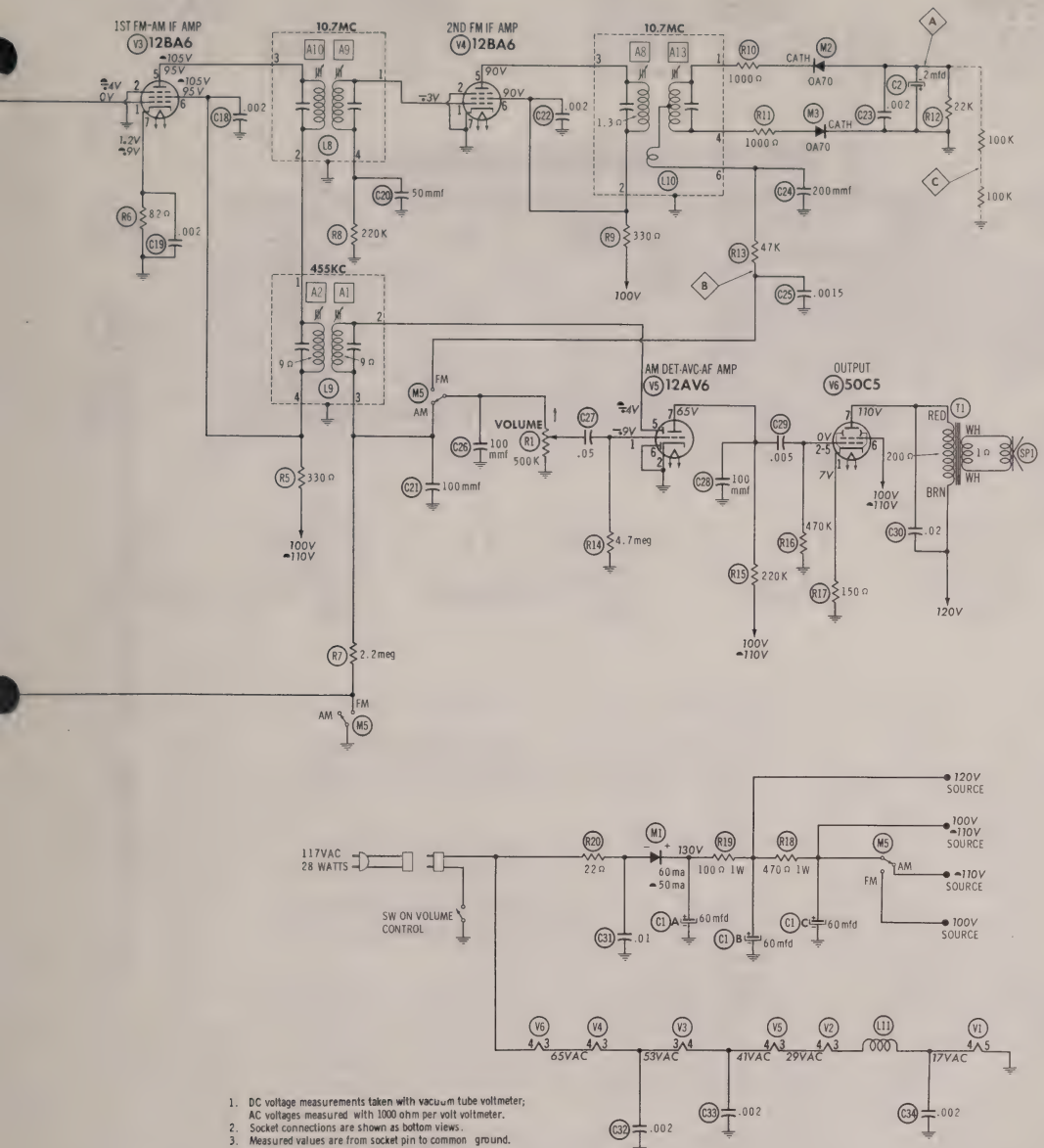


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

REALISTIC MODEL 90LX695

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	17EW8	V4	2nd FM IF Amp.	12BA6
V2	AM Converter	12BE6	V5	AM Det. -AVC-AF Amp.	12AV6
V3	1st FM-AM IF Amp.	12BA6	V6	Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150		AFH3-11-50	XC0105	FP311.65	TMT-3133	TVL-3442	
B	60	150							
C	60	150							
C2	2	50		PTT88	NLW2-50	TC302	MLV2-50	TE-1301	

FIXED CAPACITORS

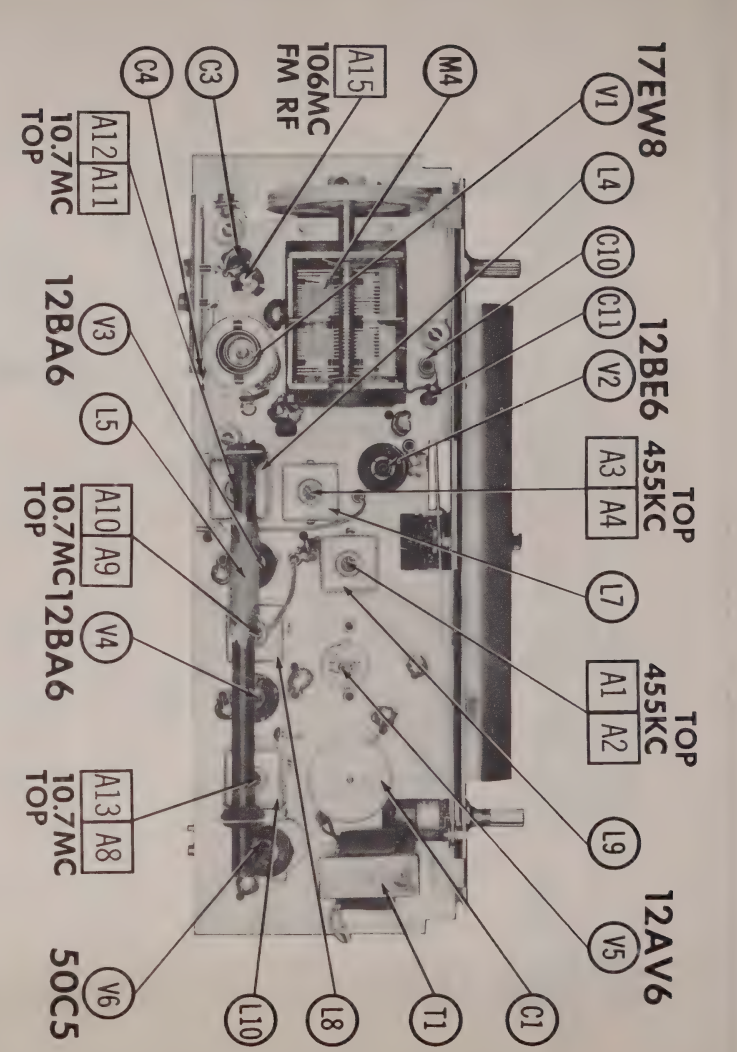
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	500		DI-500	DD-501	L10T5	CCD-501	GP350	10TS-T50
C4	50		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C5	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C6	3-9			829-10				
C7	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	200		SI 200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C9	15 5%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C10	3-9			829-10				
C11	5 N750 +.5mmf		N750-SI 5.0	TCN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C12	30 N330 5%					*		10TCS-Q33
C13								
C14	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C15								
C16	320 5%				5R5T33	CM-19B-331J		MS-333
C17	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C18	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C20	50		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C21	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C22	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C23	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C24	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C25	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C26	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C27	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C28	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C29	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D50
C30	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C31	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C33	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½		AB-60				Volume
B	Shaft			AK-29				
C	Switch			KR-1				Power Off-On

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	220K			
R3	1000Ω			
R4	22K			
R5	330Ω			
R6	82Ω			
R7	2.2meg			
R8	220K			
R9	330Ω			
R10	1000Ω			
R11	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	22K			
R13	47K			
R14	4.7meg			
R15	220K			
R16	470K			
R17	150Ω			
R18	470Ω 1W			
R19	100Ω 1W			
R20	22Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		REALISTIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke						
L2	FM RF						
L3	FM Osc.						
L4	1st FM IF		FM-256	1463-PC	RTC-9046	T654	
L5	Loopstick		BC-419	705-A		T532	
L6	AM Osc.		BC-393	A-5496-C		T512	
L7	1st AM IF		BC-356	13-PC1	RTC-8641	T614	
L8	2nd FM IF		FM-256	1463-PC	RTC-9046	T654	
L9	2nd AM IF		BC-357	13-PC2	RTC-8642	T615	
L10	Ratio Detector		FM-257	1465-PC	RTC-9053	T659	
L11	Fil. Choke(1uh)		BC-561	4602	RTC-8515	T655	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	6-8Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REALISTIC PART No.	QUAM PART No.	
SP1	3"x 6"	PM	6-8Ω			

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	REALISTIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.060A	*	1N1763 †	40H †	SR500 †	* Selenium † Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		REALISTIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	OA70			1N295	1N295	Ratio Detector (Pigtail)
M3	OA70			1N295	1N295	Ratio Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M4	Tuning Cap.		4 Gang
M5	Switch		Function Selector (Rotary Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

PHOTOFACT® Folder

RECORDIO
MODEL 802

RECORDIO
MODEL 802

GENERAL INFORMATION

The Recordio Model R-802 is a dual track monaural tape recorder and player, and in addition, will play two-track or four-track prerecorded stereophonic tapes.

The R-802 is equipped with a quarter-track head, a 3-watt amplifier into which a stereophonic preamplifier is incorporated, and two 4-inch speakers.

No additional amplification is necessary when using the stereophonic preamplifier to operate an external amplifier. The Model SA-801, also covered in this manual, contains speakers and a power amplifier that matches the R-802 tape recorder amplifier. The SA-801 is designed specifically for use with the R-802 for stereophonic playback.

This Recordio features pushbutton control for each tape transport mode. These modes are: Rewind, Record, Stop, Play, and Fast Forward.

Double-track recording is used, giving two full-length recordings on a reel of tape. Any size reel up to 7 inches can be used.

A neon record level indicator simplifies the record level setting. New recordings can be made on previously recorded tape since the erase head is automatically positioned when the RECORD button is pressed. Monaural recordings can be made from a radio, television receiver, or phonograph, in addition to those made directly from the microphone.

This recorder has two tape speeds, 7.50-inches per second, and 3.75-inches per second. Using both tracks of the tape, the recording times are as follows:

Reel Size	3.75" Speed	7.50" Speed
5" reel (600 ft.)	1 hour	1/2 hour
7" reel (1200 ft.)	2 hours	1 hour

The Recordio R-802 is designed to operate on 60-cycle, 115-volts, AC supply only. DAMAGE WILL RESULT IF CONNECTION IS MADE TO A DIRECT CURRENT (DC) LINE.

Manufactured By:

Recordio Corporation
Charlotte, Michigan

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ469

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SET 551 FOLDER 11

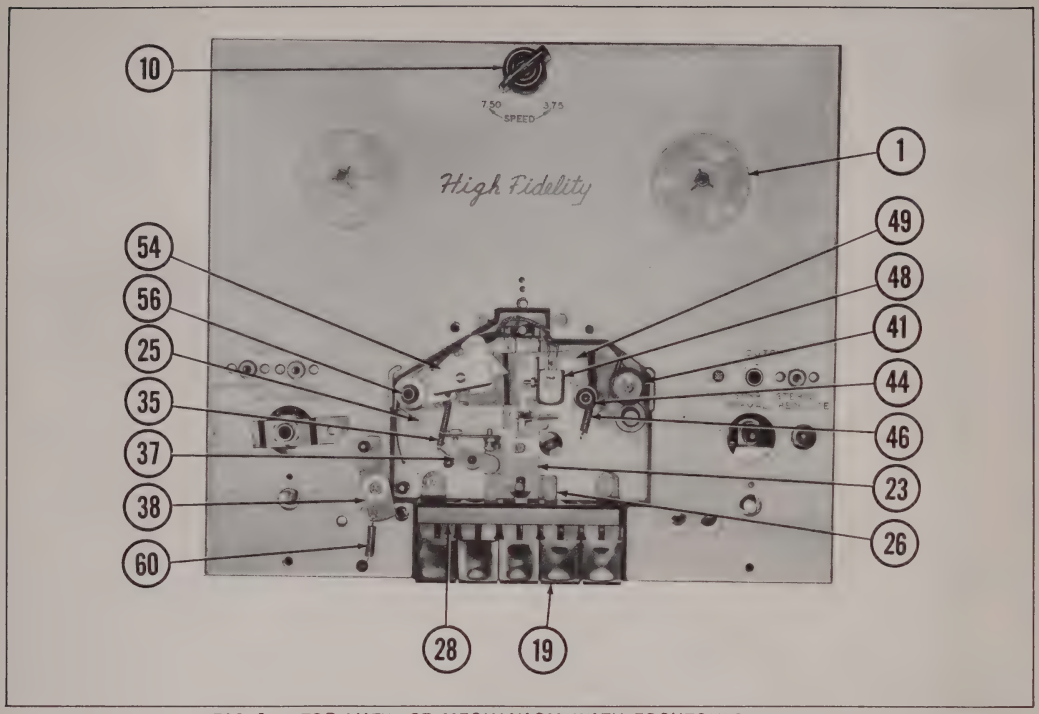


FIG.1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

FUNCTIONS OF CONTROLS & PUSHBUTTONS

Volume

Clockwise rotation of this control turns the Recordio "on" and regulates the volume for both the recording and playback operations.

Tone

Clockwise rotation of this control increases the treble response. Also, when turned clockwise, the speakers are muted when the recorder is in the Record mode. Complete counterclockwise rotation of this control provides a means to monitor recordings.

Speed

The speed control knob should point to 7.50 or 3.75 according to the speed desired. This Recordio has two tape speeds, 7.50-inches per second and 3.75-inches per second. In so far as quality of recording-reproduction is concerned, speed is an important factor. The higher the speed, generally, the greater will be the fidelity.

CAUTION: Do not turn the speed control knob unless the STOP button is depressed.

Tape Indicator

Set the Tape Indicator to zero by turning the knurled reset knob when starting to record or play back a reel of tape. If the reading is noted at various points in the tape travel, new program selections can be indexed, or previously recorded selections can be located with great accuracy.

Rewind Button

This button is used to transfer tape rapidly from the take-up reel (right) to the supply reel (left).

Record Button

When depressed, the recorder will begin recording signals fed to the tape.

NOTE: The Record Lock must be turned before the Record Button can be depressed.

Stop Button

This button is used to stop tape travel after being in either the Play, Record, Forward, or Rewind modes. It is also a safety feature and must be pressed down when the recorder is not in use.

Play Button

This button starts the recorder and plays back any recording that is on the tape.

Forward Button

This button is used to transfer tape rapidly from the supply reel (left) to the take-up reel (right).

Preparing for Operation

1. Remove the AC power cord, reel of tape, empty reel, and the microphone from the rear storage compartment.
2. Depress the Stop button.
3. Plug the AC cord into a convenient wall receptacle of the proper rating.
4. Place the Speed knob in the 3.75 or 7.50 position.

CAUTION: Do not turn Speed control knob unless Stop button is depressed.

When the Forward or Reverse buttons are depressed, the Record and Play buttons are locked so they cannot be pressed down, with the possibility of spilling tape. The buttons should always be pressed down firmly until they latch. The Stop button must be depressed before changing functions or speeds of the recorder.

IMPORTANT: Always depress the Stop button when the Recorder is not in use.

Threading the Tape

1. Place a reel of tape on the supply pan (left) making sure the reel slots catch the protrusions of the pan.
2. Place an empty reel, the same size or larger, on the take-up pan (right). Again make certain the reel slots catch the protrusions of the pan.
3. Release the Stop button by pressing lightly on any one of the other buttons so that all buttons are in the release position. This releases the tape brakes, simplifying tape threading.
4. Unwind about 14-inches of tape from the supply reel. Hold a section of tape straight with both hands and insert tape in tape slot making sure the dull coated side faces rear of machine.
5. Insert the free end of the tape into one of the slots in the hub of the empty reel and turn it a few turns to secure the tape to the reel.

Recording from Microphone

1. Turn the On-Off-Volume control to the right until a click is heard and allow sufficient time for the Redi-Lite to glow.
2. Insert the microphone plug into the Microphone input jack.
3. Move the record lock (38) downward with the left hand. This releases the safety lock which prevents accidental erasure.
4. Depress the Record button, while holding the record lock (38) down with the left hand, until it latches.
5. Adjust the volume control until the record level indicator just flashes while speaking into the microphone.

NOTE: The tone control is disconnected when in the record position.

Recording from Radio, Television, or Phonograph

1. To record from a radio or television receiver, connect a patch cord with two alligator clips on one end across the voice coil of the radio or television speaker. Plug the other end into the monaural input jack.
2. To record from a phonograph, plug the phono plug into the monaural input jack.
3. Proceed as in "Recording from Microphone".

Speed Change Knob

The arrow on the knob should point to 7.50 or 3.75, according to the speed desired.

CAUTION: Do not operate the speed change knob while the unit is running. The stop button must be depressed first before changing speeds.

To Use Second Track

1. When all of the tape has been wound onto the take-up reel, depress the stop button.
2. Remove the take-up reel from the right take-up spindle and replace it with the empty reel.
3. Place the full reel of tape on the left supply spindle.
4. Thread the tape.
5. Proceed with the recording.

Playing Recordings

1. Turn the recorder on with the On-Off-Volume control knob.
2. Thread the tape.
3. Set the speed change knob (10) to the speed at which the recording was made.
4. Depress the play button.
5. Adjust the volume and tone controls to the desired listening level.

Fast Forward or Reverse

When a certain portion of the tape is to be played over, it is not necessary to rewind the entire tape. The tape will advance or reverse at a rapid speed to the desired place by depressing the forward or reverse button.

Tape Timer

If you wish to play back a certain recording, note the reading on the timer scale when the recording is being made or heard. Rewind or advance the tape to the number on the scale and then depress the stop button. Depress the play button and the desired re-

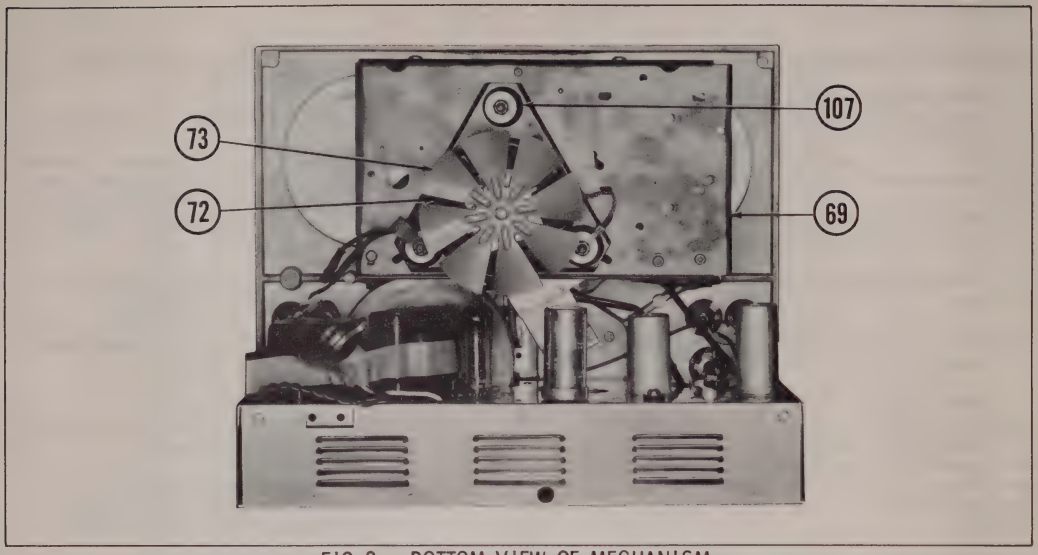


FIG.2 BOTTOM VIEW OF MECHANISM

cording will be played back.

When starting a new reel of tape, reset the timer pointer to "O" by rotating the reset knob. By starting at "O" on all tapes, the number location can be catalogued for each recording on any reel.

Erasing Recorded Material

The erase head is automatically positioned when the record button is depressed, erasing any previous recording before a new one is made. Tapes may be erased without putting new material on the tapes by depressing the record button and turning the volume control to its minimum position. One track is erased at a time. To erase the second track, reverse the reels and repeat the foregoing operation.

To Use Recorder as a Public Address System

Plug the microphone into the microphone input jack. Turn the monitor switch to the left. Turn the On-Off-Volume control to the On position. Depress the Record button and talk into the microphone.

CAUTION: When using as a public address system, keep the microphone away from the loudspeakers as far as possible to prevent feedback.

To Edit and Splice Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections can be spliced together for re-use.
2. For best results, cut the tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

To Play Quarter-Track Stereophonic Tape

1. Thread the tape.
2. Connect the Stereo output jack to the input jack or terminals of an external amplifier.
3. Depress the play button and adjust the volume and tone controls of the recorder and external amplifier to the desired listening level and equal volume.
4. When the reel is completely played, reverse the reels; rethread the tape, and proceed as above.

To Play Stereophonic Records

1. Plug the stereo turntable output leads into the monaural-stereo input jacks.
2. Make certain the stop button is depressed.
3. Plug the external amplifier into the stereo output jack.
4. Turn the On-Off-Volume controls to the On position.
5. Adjust the volume and tone controls so they will be equal from each unit with the turntable running.

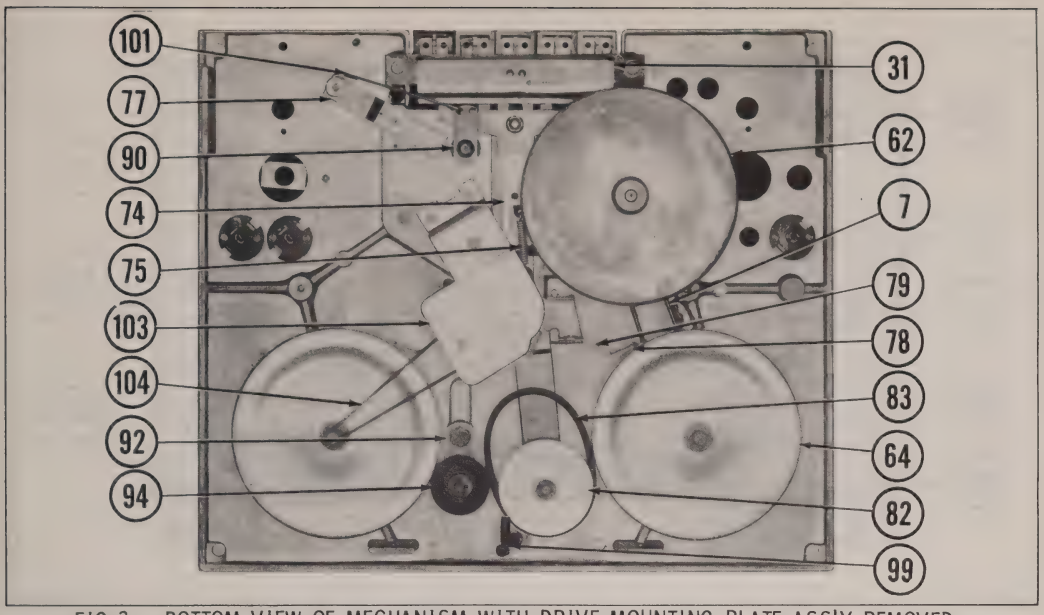


FIG.3 BOTTOM VIEW OF MECHANISM WITH DRIVE MOUNTING PLATE ASS'Y REMOVED

DISASSEMBLY

Removing the Recorder from the Case

1. Remove the front escutcheon (4).
2. Remove two screws on the top front and two screws from the rear of the recorder.
3. Lift recorder up and disconnect the speaker leads.
4. Lift the recorder out of its case.
5. Reverse the foregoing procedure to reassemble.

To Remove the Amplifier from Tape Transport

1. Unplug the head leads.
2. Remove the microphone and external speaker jacks.
3. Remove the leads from the input and stereo jacks.
4. Unsolder the motor leads.
5. Disconnect the record switch linkage.
6. Remove two screws from each side of the amplifier and lift amplifier from tape transport.
7. Reverse the foregoing procedure to reassemble.

To Remove SA-801 Amplifier from Case

1. Remove the screw, holding the line cord, in the storage compartment.
2. Remove six screws from the top of the control board.
3. Lift the amplifier from the case.
4. Reverse the foregoing procedure to reassemble.

To Remove SA-801 Amplifier from Control Board

1. Remove two screws from the input jack.
2. Remove the external speaker jack.
3. Unsolder the Redi-Lite leads.
4. Remove two hex nuts holding the amplifier to the control board.
5. Lift amplifier away from control board.
6. Reverse the foregoing procedure to reassemble.

CLEANING

Foreign matter should be cleaned from under the plastic pushbuttons occasionally. The pressure roller (41), recording head (48), and tape guide posts (44) and (56), should be cleaned occasionally with a soft cloth and alcohol to remove the tape residue

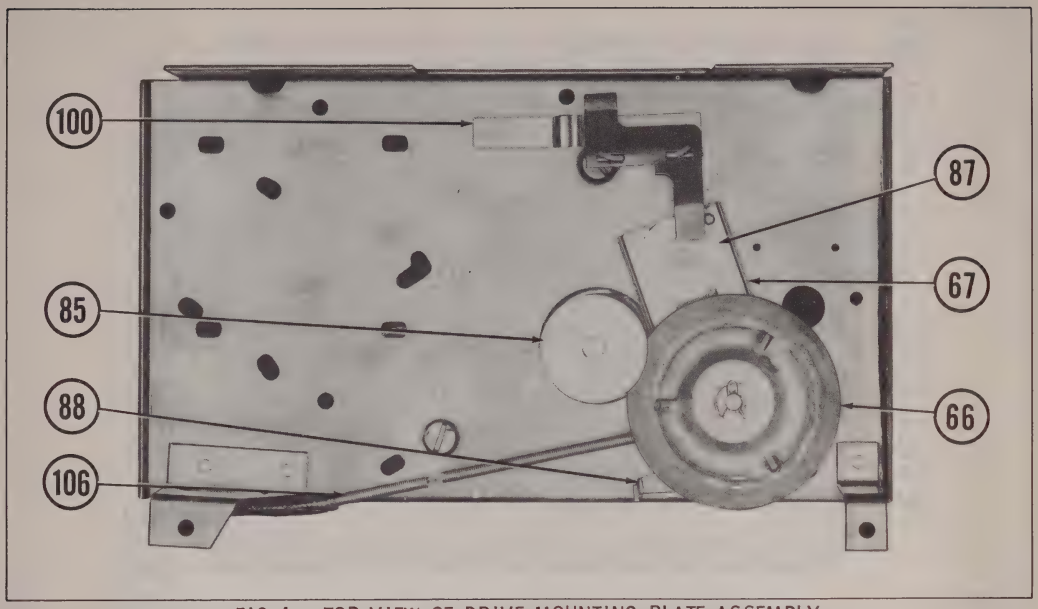


FIG.4 TOP VIEW OF DRIVE MOUNTING PLATE ASSEMBLY

LUBRICATION

All rotating parts are provided with oilite bearings and are lubricated before leaving the factory. If the recorder is disassembled for repair, clean all sliding levers and lubricate with a drop of good grade motor oil.

ADJUSTMENTS

Record-Play Head

1. Remove the rear escutcheon (15) and the front escutcheon (4).
2. Thread an alignment tape or a good prerecorded tape on the recorder.
3. Adjust the controls as described under "Playing Recordings".
4. Adjust screw (47) to the right or left until the maximum high frequencies are obtained.

Pressure Pad

1. Remove front escutcheon (4).
2. Depress the Play button but do not turn recorder on.
3. Use a pencil type postal scale at the end of the pad and check the amount of pressure necessary to pull the pad away from the tape. The required pressure should be 1 3/4 oz. $\pm$ 1/4 oz.

   (a) Adjust the record head pressure pad with the locked adjustment screw (36).

   (b) Adjust the guide post pressure pad by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.
4. Depress the stop button after the adjustments are made.

Erase Head

1. Remove the rear escutcheon and check to see if the erase head (54) is parallel with the tape.
2. Check to see if the top edge of the tape coincides with the top end of the diagonal slot (junction of long diagonal slot and short vertical slot).
3. To adjust the tape level, loosen set screw (55) and rotate the tape guide post (56) up or down. Tighten set screw (55).

Brake Shoe

1. The brake shoes on brake spring (79) should clear the drums by approximately 1/8" with the pushbuttons in the up position.
2. Depress the stop button and observe the brake shoes. They must contact the drums at the same time and with equal pressure.
3. To adjust the brake shoes, bend the brake slide plate assembly.

TROUBLE CHART

Symptom	Cause	Remedy
No drive in record or playback.	1. Idler tension spring (106) loose or broken and not holding the idler wheel (66) in engagement with the motor pulley (85) and flywheel (62).	1. Replace idler tension spring (106).
	2. Idler slide plate (67) binding on slide bushing (87) preventing idler wheel (66) from sliding forward.	2. Check for burrs on the idler slide plate (67) and slide bushing (87). Check to see if the idler slide plate (67) is bent.
No fast forward or reverse.	1. Idler lever tension spring (75) loose or broken and not actuating idler lever (81).	1. Replace idler lever tension spring (75).
	2. Idler drive belt (83) not properly connected.	2. Make sure the idler drive belt (83) is in the grooves of the pulleys.
No record.	1. Pressure pad not adjusted properly.	1. See "Pressure Pad Adjustment".
	2. Record head (48) loose on its mounting.	2. Tighten and adjust as described under "Record-Play Head".
	3. Tape not threaded properly.	3. Make certain the dull side of the tape faces the head.
	4. Defective Record-Play head (48).	4. Replace head (48).
Pushbuttons fail to latch into position.	1. Lock plate spring (33) loose or broken.	1. Replace lock plate spring (33) so lock plate will be held against the hinge bracket (31).
Does not erase.	1. Spring (35) loose or broken.	1. Replace spring (35) so the erase head is pulled forward to engage the tape.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	C-13.318	Reel Pan & Shaft Ass'y.	26	B-35.1045-1	Playback Slide Plate Ass'y.
2		Shim Washers	27	B-33.446	Spacer
3	C-13-254-15	On-Off-Volume and Tone Control Knob	28	B-19.858	Pushbutton Retainer Bracket
			29	B-19.876-1	Pushbutton Lever
4	E-13-295-10	Front Escutcheon	30	B-31.337	Pushbutton Return Spring
5	57-1C-606-6	#6-32 x 3/8" B.H.M.S. Phil. Stl. Screw	31	B-19.859	Hinge Bracket for Pushbutton
			32	B-19.870	Locking Plate for Pushbuttons
6	B-31.351	Reel Drive Spring	33	B-31-343	Lock Plate Spring
7		Tape Guide Post	34		Screw
8	48-2213-1	Hex Nut, 3/8-32 x 1/2	35	B-31.361	Erase Head Tension Spring
9	E-13.445-1	Baseplate	36	57-16B-613-0	#6-32 x 3/8 R.H.M.S.
10	C-13.253-7	Speed Shift Knob	37	B-35.766	Record Actuating Lever Ass'y.
11	73-2254-6	Felt Washer	38		Record Lock
12	57-6C-620-1	#6-32 x 1 1/4 R.H.M.S. Phillips	39	B-33.418-2	"E" Retaining Ring
13	57-4C-405-5	#4-40-5/16 O.H.M.S. Phillips	40	B-28.163	Linen Washer
14	B-32.302-2	Timer Knob	41*	B-33.404*	*Pressure Roller
15	D-13.292-2	Rear Escutcheon	42	B-28.163	Linen Washer
16	35.851	Timer Shaft & Indicator Ass'y.	43	57-3439-0	#6-32 x 3/16 Bristol Hd. Set Screw
17	57-1C-618-1	#6-32 x 1 1/8 Phillips R.H.M.S.	44	B-32.309	Tape Guide Post (Right)
18	B-19.975-2	Rear Escutcheon Plate	45		Fiber Washer
19	B-13.258-8	Pushbuttons (Black)	46	B-31.360	Pinch Roller Tension Spring
20	B-33.412	Push-On-Stud Nut	47		Record Head Adjusting Screw
21	73-2241-148F	Flat Washer	48	B-36.254	Play-Record Head
22	B-19-881	Playback Actuating Lever	49	B-19.989	Play-Record Head Mtg. Bracket
23	B-19.868	Record Slide Plate	50	B-19.1564	Play-Record Head Shim
24	B-31.334	Pressure Pad	51		Play-Record Head Mtg. Screw
25	B-19.892	Pressure Pad Spring	52	57-16B-613-0	Erase Head Mounting Screw

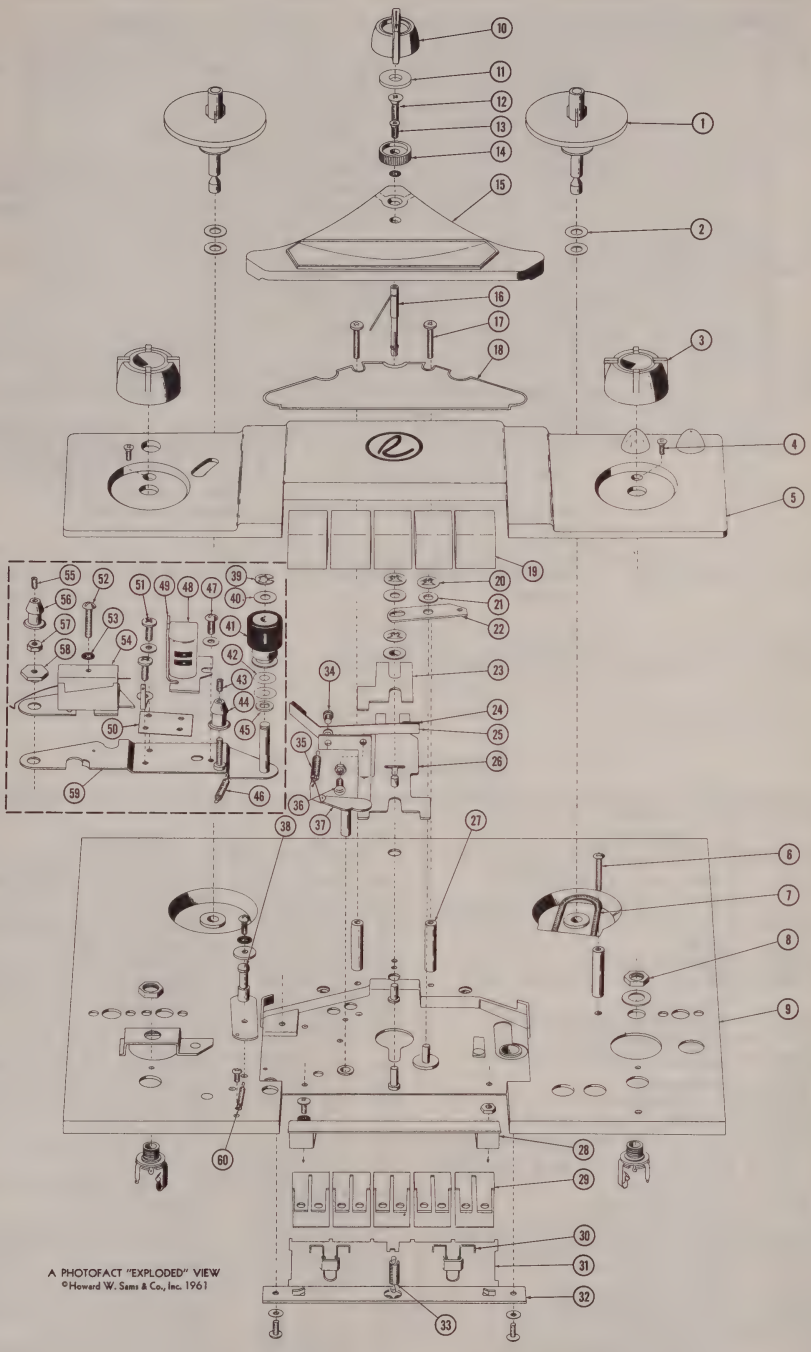


FIG. 5A EXPLODED VIEW OF PARTS ABOVE BASE PLATE

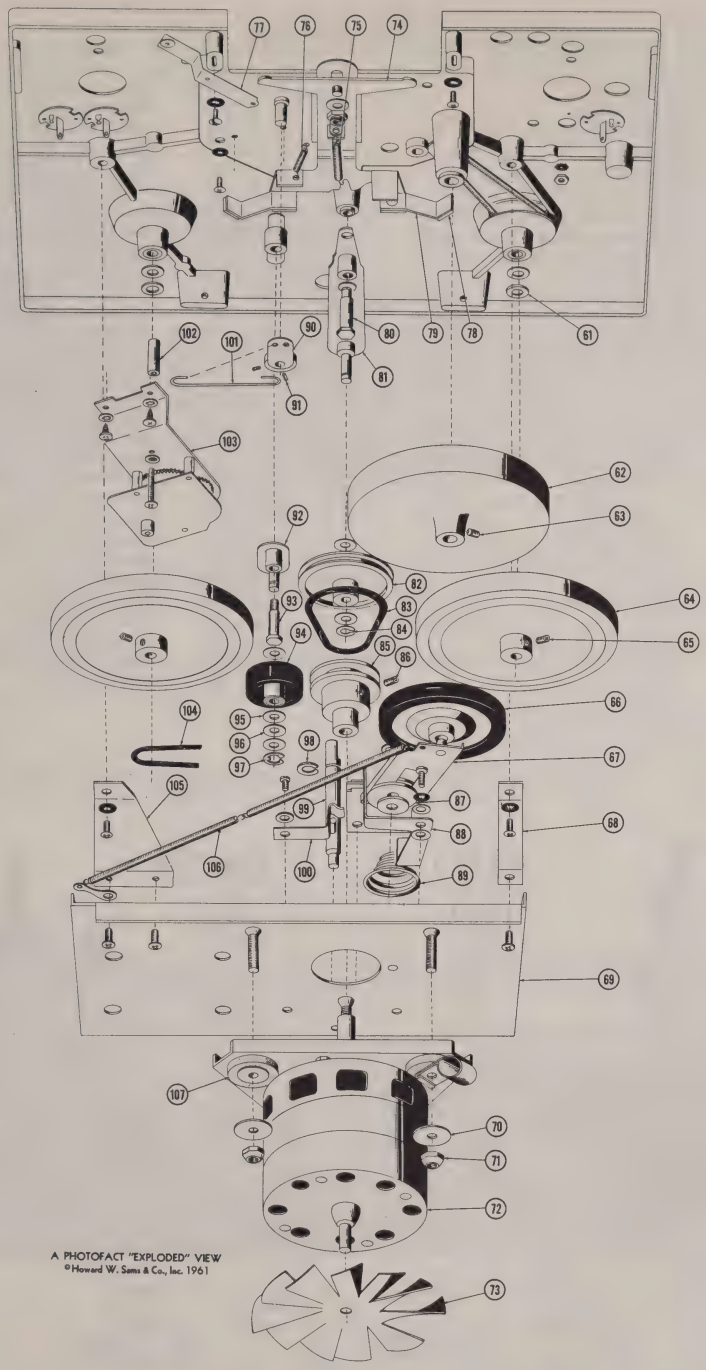


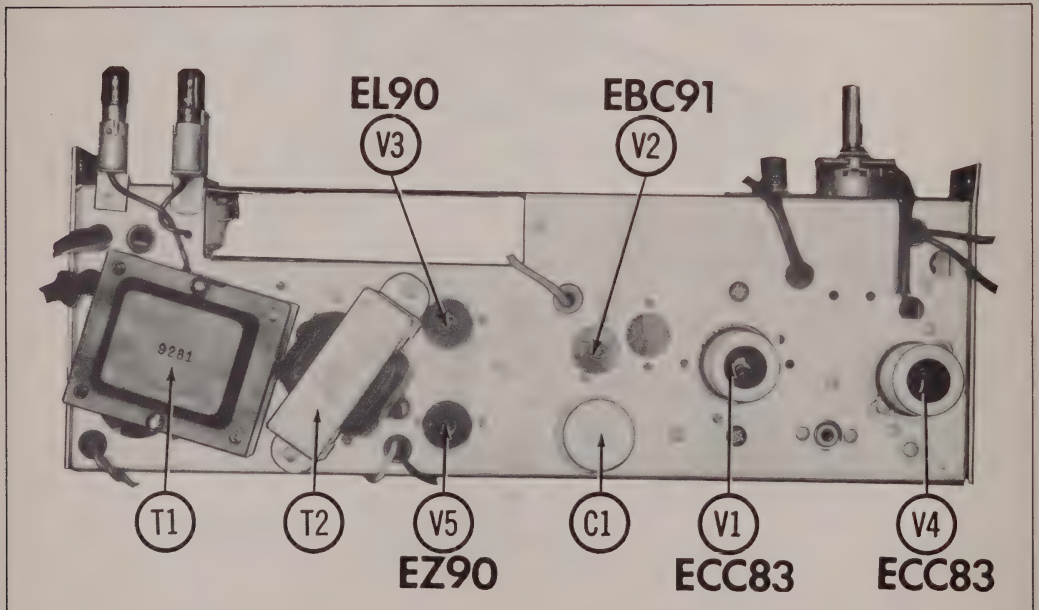
FIG. 5 B EXPLODED VIEW OF PARTS BELOW BASE PLATE

Ref. No.	Part No.	Description
53	73-2233-5	Lockwasher
54	C-35.756-1	Erase Head
55	57-3439-0	#6-32 x 3/16 Bristol Hd. Set Screw
56	B-32.300	Tape Guide Post (Left)
57	48-410-1	#6-32 Nut, Steel
58	B-32.336	Tape Guide Post Spacer
59	C-19.1565-1	Pressure Roller Plate Ass'y.
60	B-19.849	Record Lock Tension Spring
61	B-28.163	Linen Washer
62	13.257-1	Flywheel
63	57-3698-0	#8-32 x 3/16 Bristol Hd. Set Screw
64	C-35.1050-1	Brake Drim & Bushing Ass'y.
65	57-3698-0	#8-32 x 3/16 Bristol Hd. Set Screw
66*	*B-33.408	*Rubber Bonded Idler Wheel
67	B-19.838	Idler Slide Plate
68	B-19.976-1	Angle Bracket for Mounting Drive Ass'y.
69	D-35.1054-2	Drive Mounting Plate Ass'y.
70		Flat Washer
71	48-409-1	Hex Head Elastic Stop Nut
72	D-36.153	Motor, Round Type
73		Fan
74	B-35.1046	Shift Plate Ass'y.
75	B-31.339	Idler Lever Tension Spring
76	B-31.338	Brake Return Spring
77	B-19.906	Record Interlock
78	B-31.335	Brake Pad, Felt

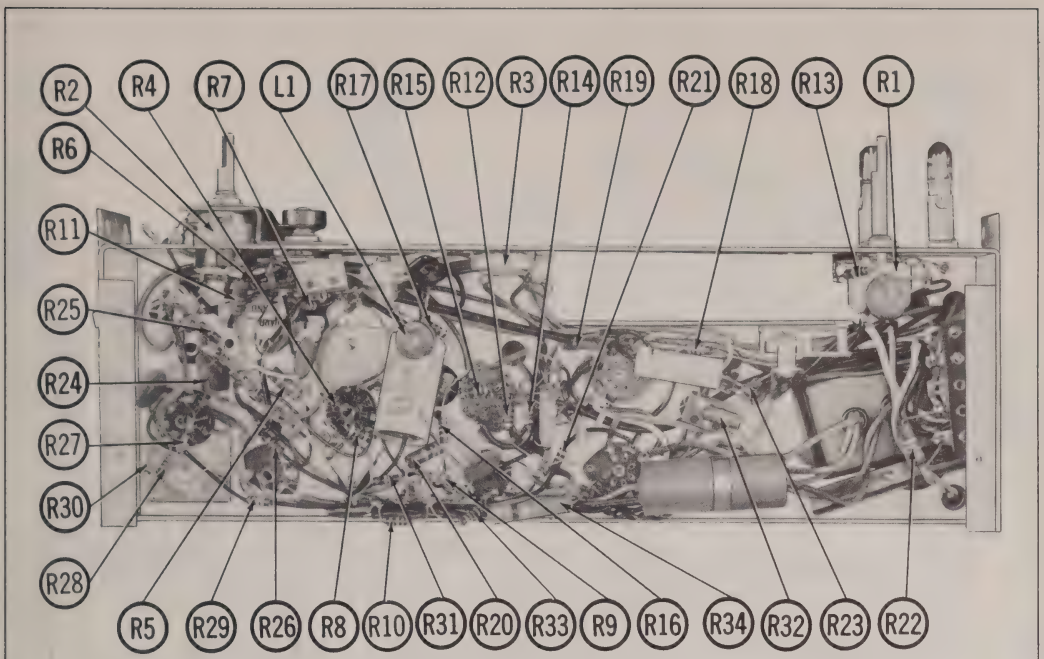
Ref. No.	Part No.	Description
79	B-35.1070-1	Brake Spring Ass'y.
80	B-32.275	#8-32 H.H. Shoulder Screw
81	B-35.1051	Idler Lever Ass'y.
82	B-32.367	Idler Drive Sheave
83	B-28.181	Idler Drive Belt
84	B-33.418-2	"E" Retaining Ring
85	B-32.288	Motor Pulley
86	57-3698-0	8-32 x 3/16 Bristol Head Set Screw
87	B-32.264	Idler Slide Bushing
88	B-19.1431-1	Idler Throw-Out Lever
89	B-31.327	Idler Lift Compression Spring
90	B-19.877	Switch Lever
91	57-3698-0	Set Screw
92	B-19.873	Sub-Idler Plate
93	B-32.275	#8-32 H.H. Shoulder Screw
94	B-33.405	Sub Idler Wheel
95	73-2254-3	Felt Washer
96		Flat Washer
97	B-33.418-2	"E" Retaining Ring
98	B-33.407-1	Retaining Ring
99	B-32.293	Speed Control Shaft
100	B-19.961	Speed Control Shaft Detent Spring
101	B-31.333	Switch Arm Link
102	B-33.118	Spacer
103	B-33.445	Gear Train
104	B-28.175	Counter Belt
105	B-19.862	Drive Mounting Plate Bracket
106	B-31.324	Idler Tension Spring
107	B-28.194-2	Shock Mount

* Pressure Roller WALSCO Part No. 1457

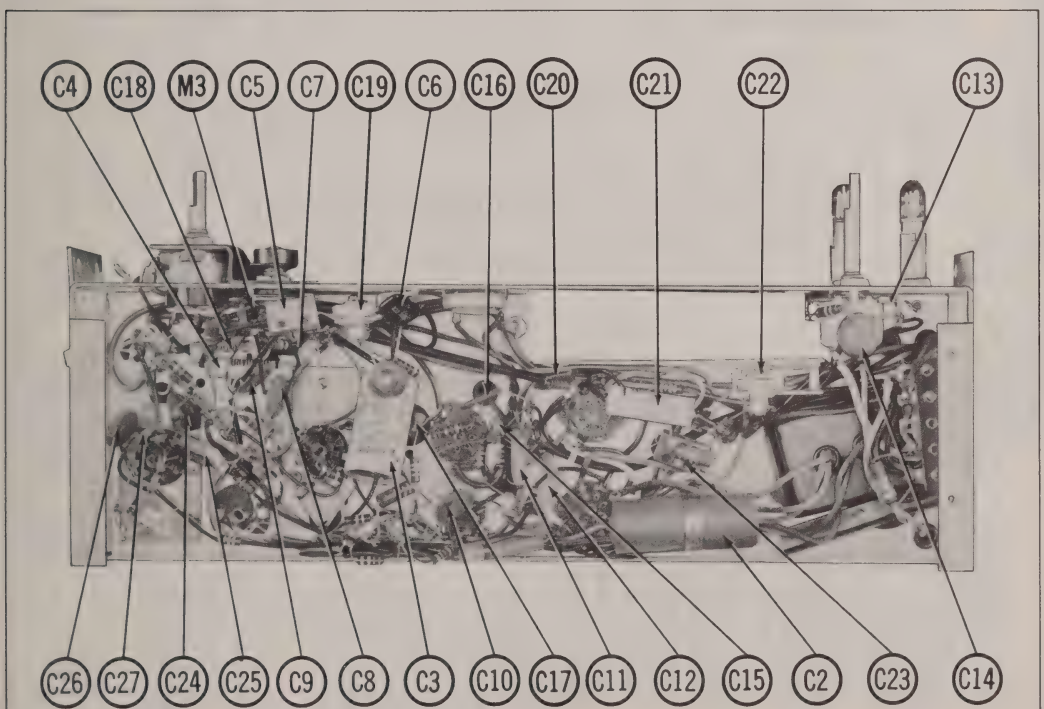
* Rubber Bonded Idler Wheel WALSCO Part No. 1430



MODEL R-802 CHASSIS TOP VIEW



MODEL R-802 CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



MODEL R-802 CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.

MODEL R—802 ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel Preamp. - Bias Osc.	ECC83/12AX7
V2	Left Channel AF Amp.	EBC91/6AV6
V3	Left Channel Output	EL90/6AQ5
V4	Right Channel Preamp.	ECC83/12AX7
V5	Rectifier	EZ90/6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■30	250	B-5.437	AFH3-89	C0670	FP329.5	TMT-3262	TVL-3565	
B	▲30	250							
C	30	25							
C2A	10	200	B-5.444	PRS2300	BBRD2225	TCD52	TDLD-26	TVA-2722	Note 1
B	10	200							Note 1
C3	20	250		PRS1570	BR2025	TC55	TD-20-250	TVA-1508	Note 1

Note 1. C3 may be a 10mfd section of C2 (C2 Part #B-5.480).

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C6	820 10%		1469-00088		5R5T82	CM-19B-821K	MCB251	MS-382
C7	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C12	.0015		SI 1500	D6-152	BYA10D15	CCD-152	B-215	5HK-D15
C13	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C14	.003		D1-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C15	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C16	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	220		SI 220	D6-221	L10T22	CCD-221	B-322	10TS-T22
C18	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C19	3-35	#B-4.144						
C20	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C22	5-70	#B-4.146				462		
C23	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221	CNO-322	10TS-T22
C24	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	50 10%		1469-00005	TCZ-50	22R5Q5	CM-19B-500K	MCB225	MS-45
C26	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Recordio Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RECORDIO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	C-8.227-2	BT-74	A47F5-1meg	Q19-137X	UT-443	Volume
	500K Tap							
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	250K	½	C-8.249-1	B-51	A47-250K-Z	Q13-130	U44	Tone (Note 1)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Monitor Off-On
R3A	500Ω	½	C-8.240	TT-4	B47-500-S	B11-103	PTA52L	Hum Balance
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

Note 1. Some versions may use Part #C-8.231-1. See R36 for replacements.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REPLACEMENT DATA REMARKS
R4	1.5meg			
R5	8200Ω 1W			
R6	330K			
R7	680K			
R8	4.7meg			
R9	150K			
R10	22K			
R11	22K 1W			
R12	68K			
R13	100K			
R14	470K			
R15	6.8meg			
R16	180K			
R17	47K			
R18	470K			
R19	1.5meg			
R20	330Ω 1W			
R21	120K			
R22	33Ω			
R23	330K			
R24	1000Ω			
R25	10meg			
R26	220K			
R27	1meg			
R28	2.2meg			
R29	220K			
R30	5600Ω			
R31	100K			
R32	270K 1W			
R33	4700Ω			
R34	470Ω 2W			

COILS (RF-IF)

ITEM No.	USE	RECORDIO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Bias Osc.	B-1.557					60KC

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V Ⓐ .3A	440VCT Ⓐ .040A DC	6.3V Ⓐ 1.9A	C9.281					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5500Ω	3-4Ω	C-9.264	A-2935	A-3877①	24S51①	S-5X	① Drill new mtg. holes.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	RECORDIO PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	6-8Ω	30.354-2	46A07Z6.4	
SP2	4"	PM	6-8Ω	30.353-2	4A07Z8	

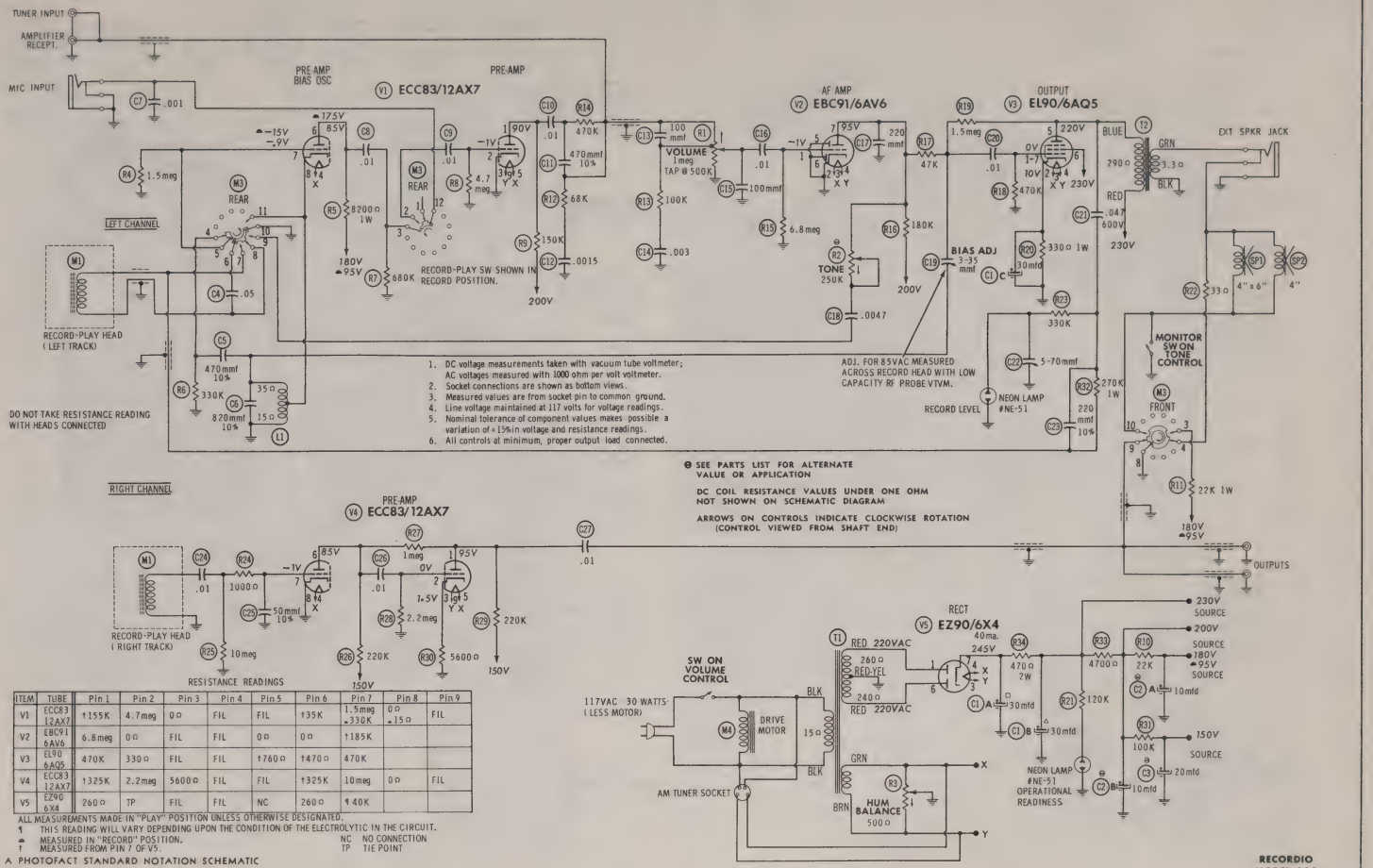
MISCELLANEOUS

ITEM No.	PART NAME	RECORDIO PART No.	NOTES
M1	Head	B36-254 (or) B36-258	Record (World Magnetics) Record (Michigan Magnetics)
M2	Head	C-35.756-1	Erase Assy. (Permanent Magnet Type)
M3	Switch	B-11.247	Function (Rotary Wafer Type)
M4	Motor	35-1053-1	Drive Assy.
M5	Microphone	36-195	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†155K	4.7meg	0Ω	FIL	FIL	†35K	1.5meg ⇗330K	0Ω ⇗15Ω	FIL
V2	EBC91 6AV6	6.8meg	0Ω	FIL	FIL	0Ω	0Ω	†185K		
V3	EL90 6AQ5	470K	330Ω	FIL	FIL	†760Ω	†470Ω	470K		
V4	ECC83 12AX7	†325K	2.2meg	5600Ω	FIL	FIL	†325K	10meg	0Ω	FIL
V5	EZ90 6X4	260Ω	TP	FIL	FIL	NC	260Ω	¶ 40K		

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
⇗ MEASURED IN "RECORD" POSITION.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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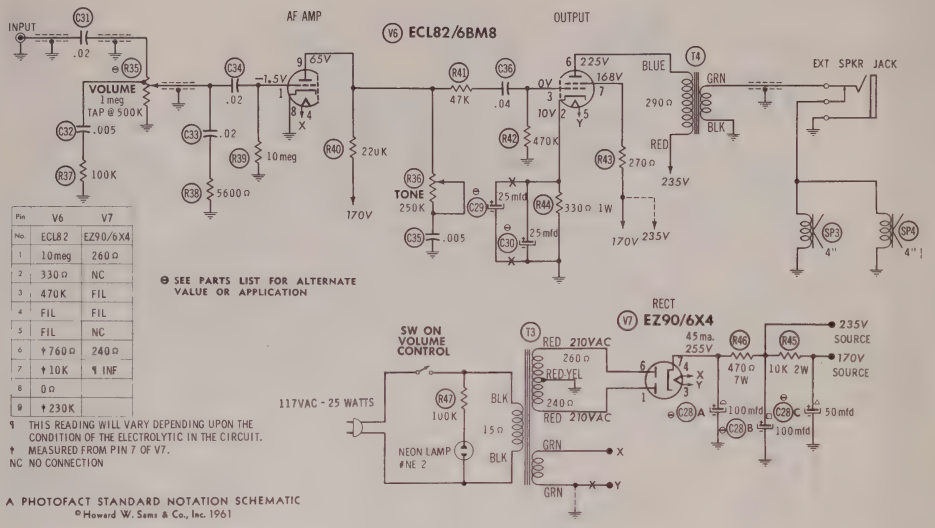
MODEL R-802 SCHEMATIC

RECORDIO
MODEL 802



Pin No.	V6 ECL82	V7 EZ90/6X4
1	10meg	260Ω
2	330Ω	NC
3	470K	FIL
4	FIL	FIL
5	FIL	NC
6	†760Ω	240Ω
7	†10K	¶ INF
8	0Ω	
9	†230K	

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V7.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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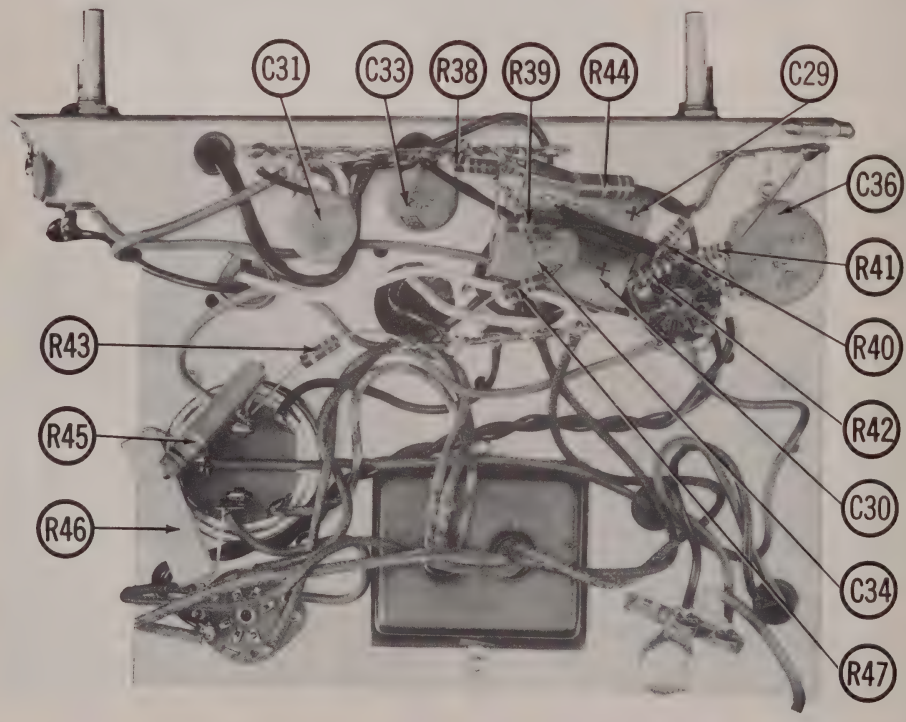
MODEL SA-801 SCHEMATIC



MODEL SA-801 CHASSIS BOTTOM VIEW

MODEL SA–801 ELECT. PARTS LIST

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V6	Right Channel AF Amp. - Right Channel Output	ECL82/6BM8	V7	Rectifier	EZ90/6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C28A	▲100	300	C-5.421-11			WP219		TVLS-3584*	Note 1
B	■100	300				TC69			Note 1
C	▲50	300							
C29	25	25		PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	Note 2
C30	25	25		PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	Note 2

Note 1. In some versions C28A and C28B are reversed.
Note 2. In some versions C29 and C30 are combined in one 50mfd unit (Part #B-5.464.2).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C31	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C32	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C34	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C35	.005		BPD-005	DD-502	BYB6S2	CCD-502	B-250	5HK-D50
C36	.04			DD-403	BYB6S4	6DP-3-403	GP140	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RECORDIO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS–IRC PART No.	MALLORY PART No.	
R35A	1meg 500K Tap	½	C-8.227-2	BT-74	A47F5-1meg	Q19-137X	UT-443	Volume (Note 1)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R36A	250K	½	C-8.231-1	B-51	A47-250K-Z	Q13-130	U44	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

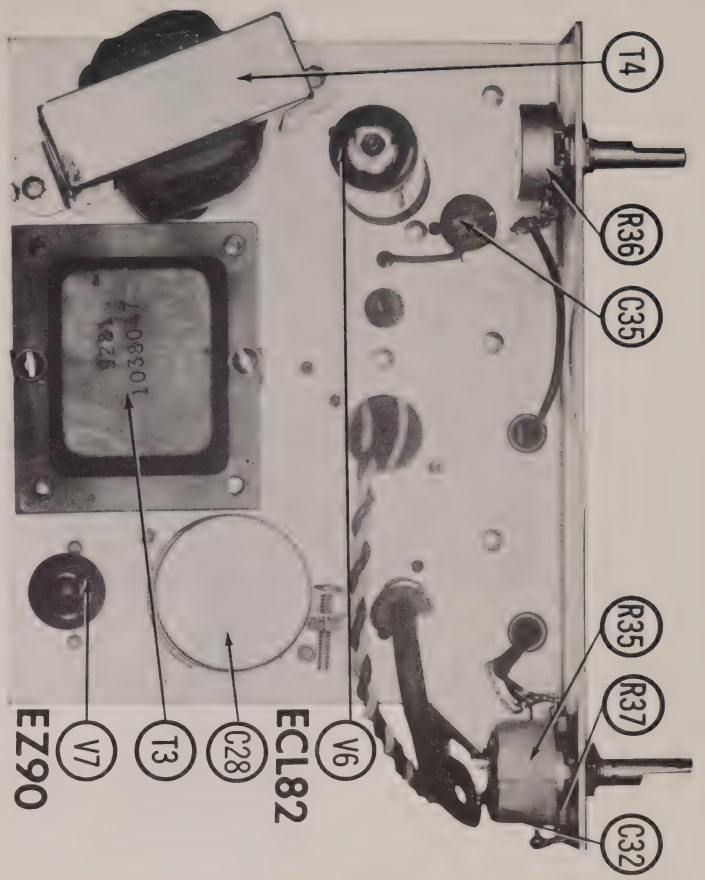
Note 1. Some versions may use Part #C-8.227-14.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R37	100K				R43	270Ω			
R38	5600Ω				R44	330Ω 1W			
R39	10meg				R45	10K 2W			
R40	220K				R46	470Ω 7W	PW7-470	7W-SQ-470	
R41	47K				R47	100K			
R42	470K								

MODEL SA–801 CHASSIS–TOP VIEW



FOLDER 11
RECORDIO
MODEL 802

MODEL SA—801 ELECT. PARTS LIST (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	117V Ⓐ .25A	420VCT Ⓐ .045A	6.3V Ⓐ 1.1A	C9.281					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	5500Ω	3-4Ω	C9.264	A-2935	A-3877 ①	24S51 ①	S-5X	① Drill new mtg. hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RECORDIO PART No.	QUAM PART No.	
SP3	4"	PM	6-8Ω	30.353-2	4A07Z8	
SP4	4"	PM	6-8Ω	30.353-2	4A07Z8	

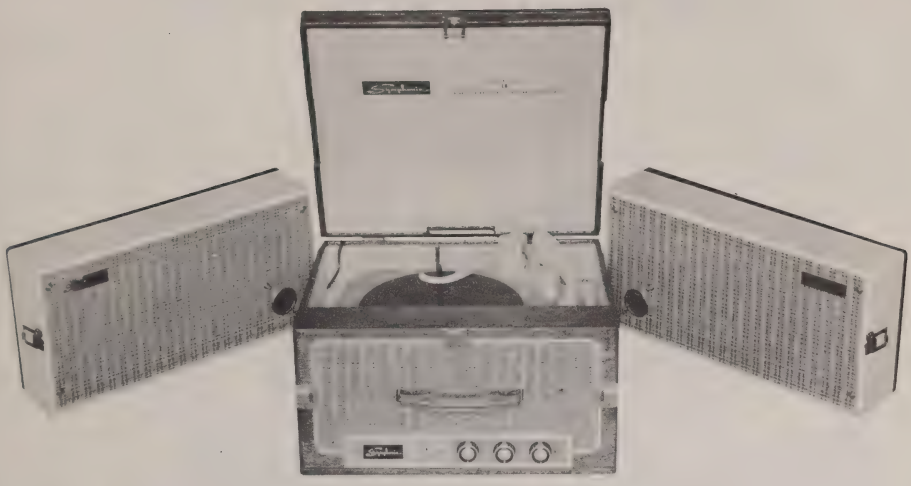
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

**SYMPHONIC
MODEL 1719**

SYMPHONIC
MODEL 1719



SYMPHONIC
MODEL 1719

TRADE NAME	Symphonic Model 1719
MANUFACTURER	Symphonic Radio & Electronic Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated 3 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 32 Watts, .31 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE TELEFUNKEN TW560 — PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT755

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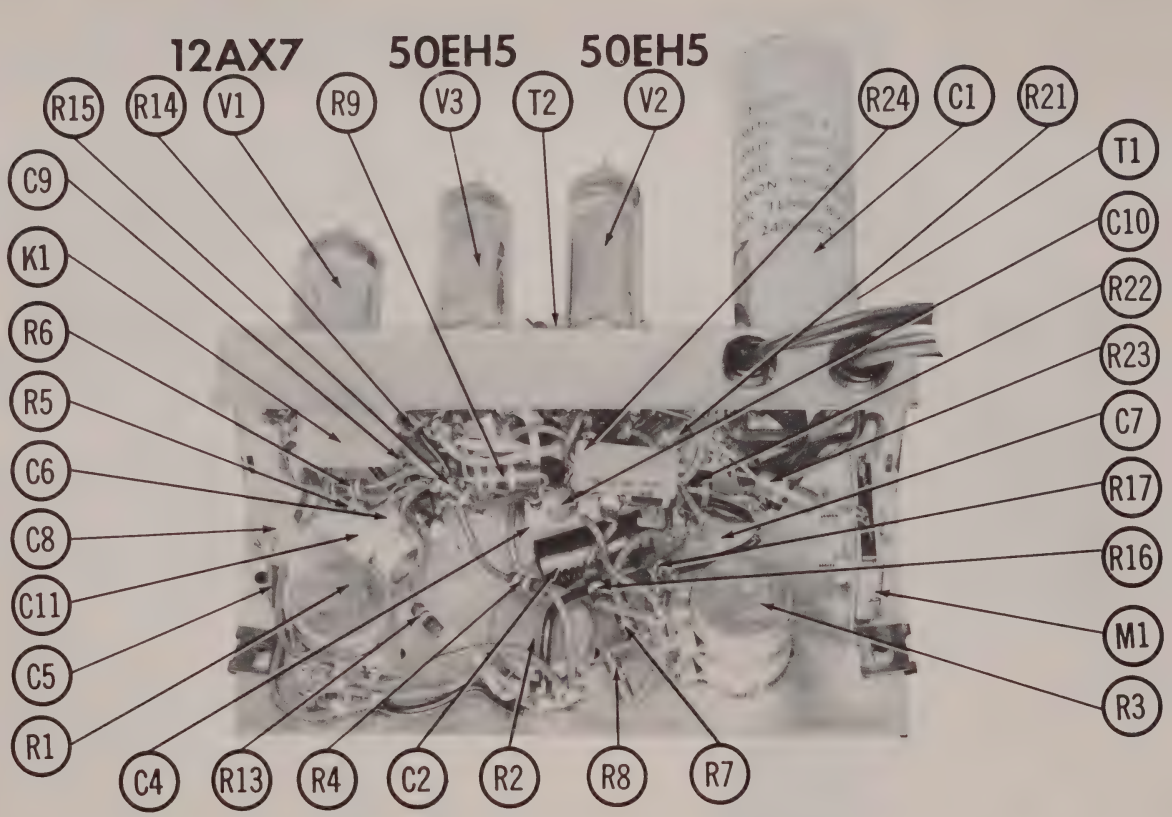


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V2	Channel 1 Output	50EH5
V3	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Symphonic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	120	150	CE-153	PR4-325	BBRQ0385	WQ405	CDBT-1009	TVA-4584	
B	100	150							
C	20	150							
C2	50	25		PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206	
C3	100	25NP	CE-124	PRS7340	BR10015	TCN425		TVANS-1207.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C5	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C7	.004		BPD-004	DD-402	BYA10D4	CCD-402	B-240	5HK-D40
C8	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C10	.004		BPD-004	DD-402	BYA10D4	CCD-402	B-240	5HK-D40
C11	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Symphonic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	log	VC-269	B-85			FA36A	Loudness, Channel 1
B	3meg	log		SR-85			RU36A	Loudness, Channel 2
C	Shaft			Not Req.			CS3500	
R2A	4meg	log	VC-330	B-86	AD47-4meg-S	B11-240	U67	Balance
B	Shaft			Not Req.	KSS-3	SK1	Not Req.	
R3A	500K	log	VC-270	B-60	AD47-500K-Z		FA55A	Tone, Channel 1
B	500K	log		SR-60	Not Req.		RU55A	Tone, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	100K			
R5	6.8meg			
R6	470Ω			(680Ω) *
R7	100K			
R8	220K			
R9	33Ω 1W			
R10	100Ω 1W			
R11	10Ω			
R12	10Ω			
R13	100K			
R14	6.8meg			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No	REMARKS
R15	470Ω			(680Ω) *
R16	100K			
R17	220K			
R18	100Ω 1W			
R19	10Ω			
R20	10Ω			
R21	1000Ω 1W			
R22	100Ω 2W			
R23	22Ω 1W			
R24	47Ω 2W			

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Symphonic PART No.	REPLACEMENT DATA
K1	Audio Coupling	(2) .01mfd, (2) 1000Ω, (2) 270K, (2) 470K	PC-3932	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Symphonic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	TR-199	A-3025 ①	A-3332 ①	26S58	S-12Z	① Use Original Frame
T2	2900Ω	3-4Ω	TR-199	A-3025 ①	A-3332 ①	26S58	S-12Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Symphonic PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SP-600	6A31	
SP2	6"	PM	3-4Ω	SP-600	6A31	
SP3	6"	PM	3-4Ω	SP-600	6A31	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Symphonic PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.065A	SR-111	1N1763 †	2F4 †	† Silicon

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA Symphonic PART No. CARTRIDGE	Symphonic PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	ST-2T	ST-40 * (LP)	80TS	N8-7*	96T	Not Req.	12TLA-S	N-12TLA-S	
		ST-40 * (78RPM)		N8-3*					

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

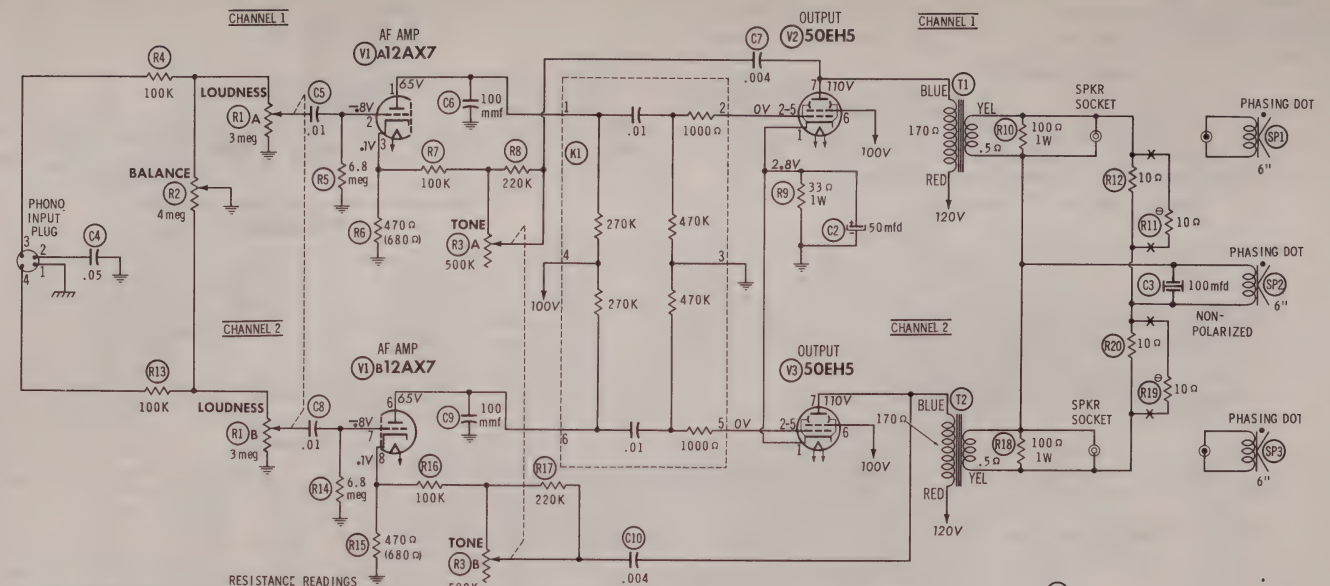
NAME	PART NO.	DESCRIPTION
Knob	KN-448	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

FOLDER 12

SYMPHONIC MODEL 1719



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†270K	6.8meg	470Ω	15Ω	0Ω	†270K	6.8meg	470Ω	NC
V2	50EH5	33Ω	470K	75Ω	130Ω	NC	†1100Ω	†270Ω		
V3	50EH5	33Ω	470K	15Ω	75Ω	NC	†1100Ω	†270Ω		

† MEASURED FROM OUTPUT OF M1.

NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SYMPHONIC MODEL 1719

PHOTOFACT® Folder

SYMPHONIC MODELS 1725, 1726, 1741, 1742, 1747, 1749

SYMPHONIC MODELS 1725, 1726, 1741, 1742, 1747, 1749

MODEL 1747

TRADE NAME	Symphonic Models 1725, 1726, 1741, 1742, 1747, 1749
MANUFACTURER	Symphonic Radio & Electronic Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier with 4-Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 61 Watts, .6 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER USED WITH MODELS 1725, 1726, 1747, and 1749 – SEE SIMILAR V-M 1571 – PHOTOFACT SET 527 FOLDER 14

FOR SERVICE INFORMATION ON RECORD CHANGER USED IN MODELS 1741 and 1742 – SEE SIMILAR TELEFUNKEN TW560-PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

SYMPHONIC MODELS 1725, 1726, 1741, 1742, 1747, 1749

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT745

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A AF Amp. - Channel B AF Amp.	ECC83 (12AX7) *	V3	Channel B Output	EL84 (6BQ5) *
V2	Channel A Output	EL84 (6BQ5) *	V4	Rectifier	EZ81 (6CA4) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Symphonic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	400	CE-136	AFH3-11	C1080	FP327.89	TMQ-4370	TVL-2767	
B	■40	350		PRS1770	BR6045	TC795	TD-50-25	TVA-2740	
C	▲40	300							
D	50	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C3	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	4TM-S50
C8	1.5 200V	Note 1	P282Z-1.5		WMF2W1P5E			
C9	1.5 200V	Note 1	P282Z-1.5		WMF2W1P5E			

Note 1. Not used in Models 1741 and 1742

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Symphonic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	1/2	VC-331					Loudness, Channel B
	900K Tap							
B	3meg	1/2						Loudness, Channel A
	900K Tap							
R2A	500K	1/2	VC-270	B-60	AD47-500K-Z		FA55A	Treble, Channel B
B	500K			SR-60	Not Req.		RU55A	Treble, Channel A
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	3meg	1/2	VC-269	B-85			FA36A	Bass, Channel B
B	3meg			SR-85			RU36A	Bass, Channel A
C	Shaft			Not Req.			CS3500	
R4A	4meg	1/2	VC-330	B-86	A47-4meg-S	B11-240	U67	Balance
B	Shaft			Not Req.	KSS-3	SK1	Not Req.	

RESISTORS

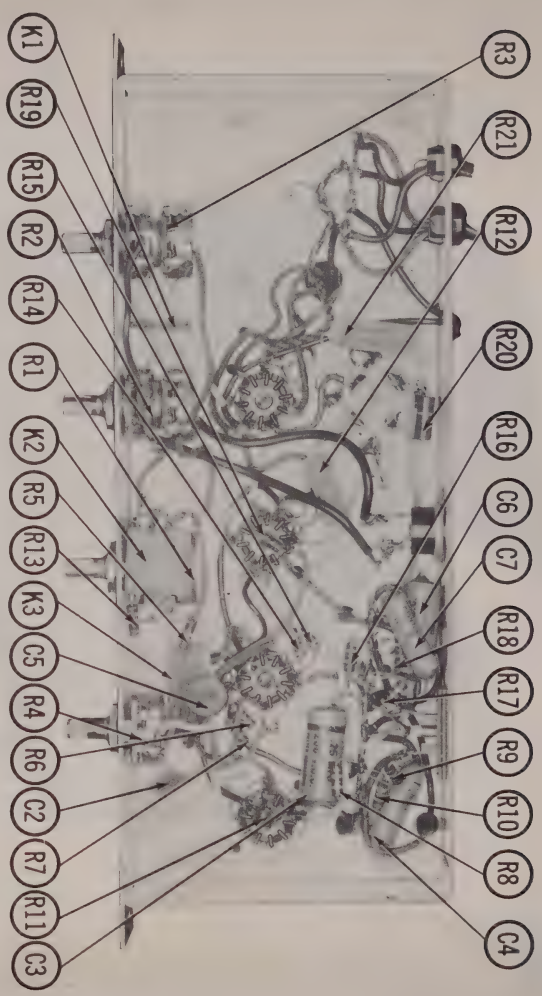
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	100K			
R6	6.8meg			
R7	680Ω			
R8	270Ω			
R9	82K			
R10	5600Ω			
R11	1000Ω			Note 1
R12	82Ω 3W	PW3-82	3W-SQ-82	
R13	100K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No	REMARKS
R14	6.8meg			
R15	680Ω			
R16	270Ω			
R17	82K			
R18	5600Ω			
R19	1000Ω			Note 1
R20	1200Ω 1W			
R21	270Ω 5W	PW5-270	5W-SQ-270	

Note 1. Not used in some versions.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Symphonic PART No.	REPLACEMENT DATA
K1 K2 K3	Tone Comp. Loudness Comp. Audio Coupling	(2) .002mfd, (2) 100K (2) .002mfd, (2) 100K (2) .01mfd, (2) 1000Ω, (2) 220K, (2) 470K	PC-4747 PC-4748 PC-3932-1	

CROSSOVER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	Symphonic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L1 L2		.3Ω .3Ω	4mH 4mH	TR-150 ① TR-150①					① Not used in Models 1725, 1741, 1742

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	Symphonic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .6A	500VCT ⓐ .100A DC	6.3V ⓐ 2.9A	TR-180					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Symphonic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2 T3	5400Ω 5400Ω	3-4Ω 3-4Ω	TR-184① TR-184①	A-3019 A-3019	A-8092 A-8092	26S49 26S49	S-5Z S-5Z	① Models 1726, 1749 use Part #TR-178

SPEAKER

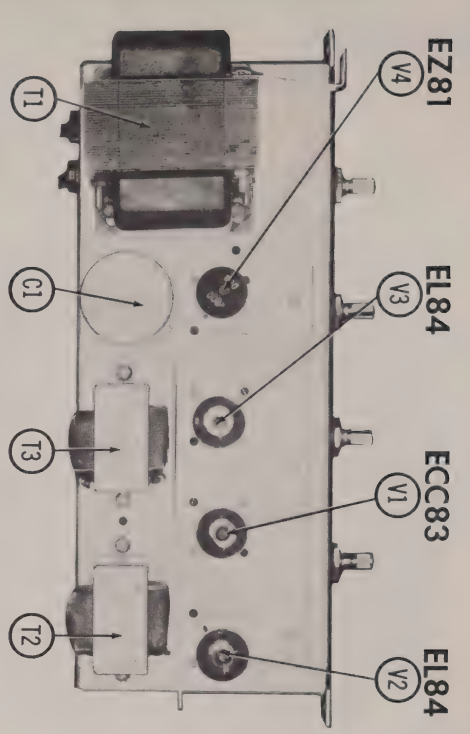
ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Symphonic PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	SP-600①	6A31	① Models 1725, 1726, 1747
SP2	3½"	PM	3-4Ω	SP-420②	3A15TZ3.2	② Models 1725, 1726, 1747, 1749
SP3	12"	PM	3-4Ω	SP-808③	12A6A	③ Model 1747
SP4	6"	PM	3-4Ω	SP-600①	6A31	④ Model 1749 (2 used)
SP5	3½"	PM	3-4Ω	SP-420②	3A15TZ3.2	⑤ Models 1741, 1742 (2 used)
	8"	PM	3-4Ω	SP-804④	8A31PAZ3.4	⑥ Model 1726
	6"x 9"	PM	3-4Ω	SP-617⑤	69A3	⑦ Model 1749
	6"x 9"	PM	3-4Ω	SP-619⑥	69A2	
	8"x 12"	PM	3-4Ω	SP-824⑦		

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	Symphonic PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	ST-20	ST-40(LP)* ST-40(ST)*	80TS	N8-7 * N8-3 *	96T	Not Req.	12THA-S	N-12THA-S*	Model 1747
	17D	N-41SD*	17D	Not Req.	26D	2604D* 2605 *	9TA4-SD	N-9TA-SD *	Models 1726, 1749
	T20/2	A20/2 *							Models 1741, 1742
	ST-20D	ST-40D(LP)* ST-40(ST)*	80-TS-TE	Not Req.	96T	Not Req.	12THA-S	N-12THA-S*	Model 1725

CHASSIS—TOP VIEW



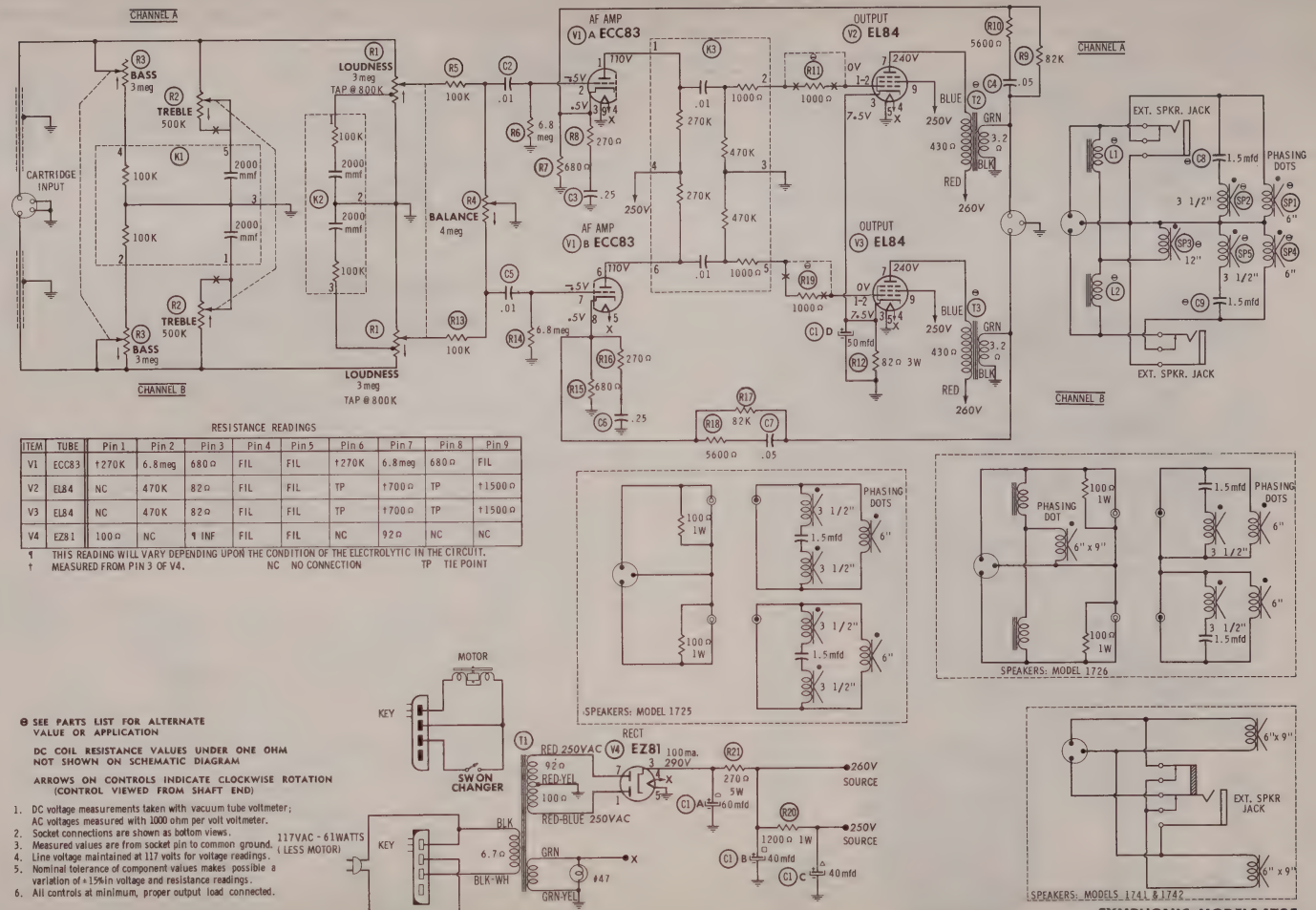
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN-323	Model 1725, 1741, 1742, 1747
Knob	KN-397	Model 1749
Knob	KN-451	Model 1726 (Black with Nickel Insert)
Knob	KN-323	Model 1726 (Black with Brass Insert)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83	†270K	6.8meg	680Ω	FIL	FIL	†270K	6.8meg	680Ω	FIL
V2	EL84	NC	470K	82Ω	FIL	FIL	TP	†700Ω	TP	†1500Ω
V3	EL84	NC	470K	82Ω	FIL	FIL	TP	†700Ω	TP	†1500Ω
V4	EZ81	100Ω	NC	¶ INF	FIL	FIL	NC	92Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V4. NC NO CONNECTION TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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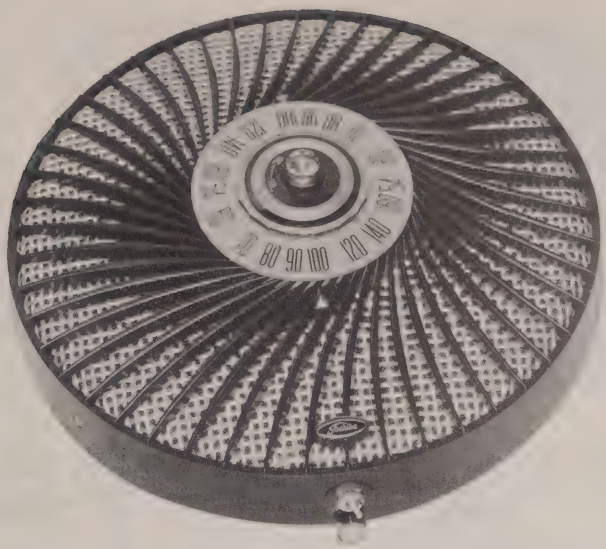
SYMPHONIC MODELS 1725, 1726, 1741, 1742, 1747, 1749



TOSHIBA MODELS
7TH-425, 7TH-425Y

TOSHIBA MODELS
7TH-425, 7TH-425Y

TRADE NAME	Toshiba Models 7TH-425, 7TH-425Y
IMPORTER	Transistor World Corp., 52 Broadway, New York 4, N. Y.
TYPE SET	Battery Operated Transistorized AM Radio
POWER SUPPLY	6 Volts DC RATING 17MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC 25MA @ 6 Volts DC (No Signal, Min. Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

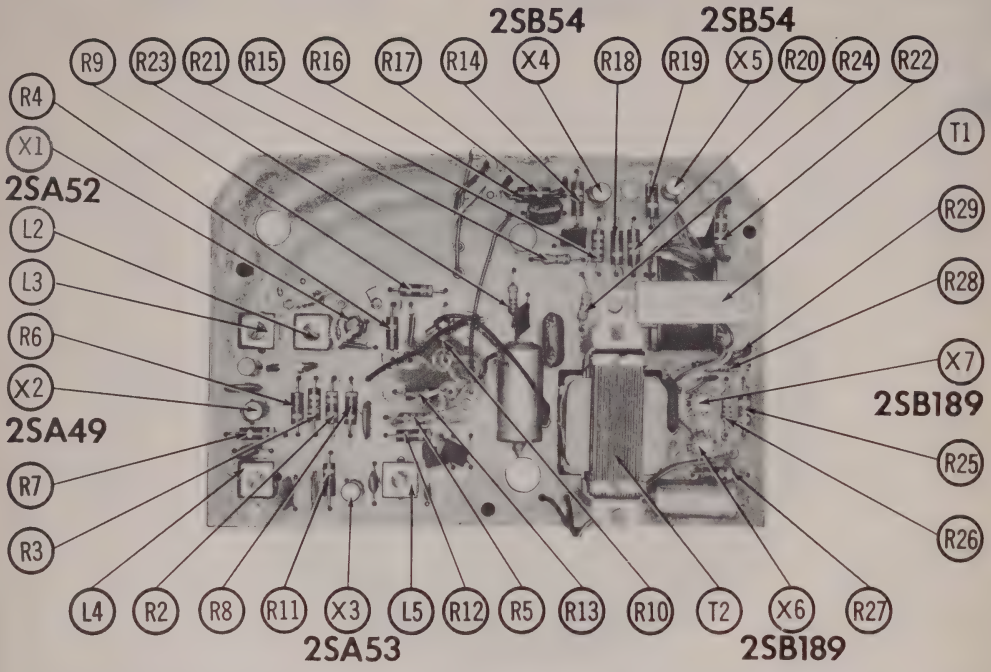
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5...GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

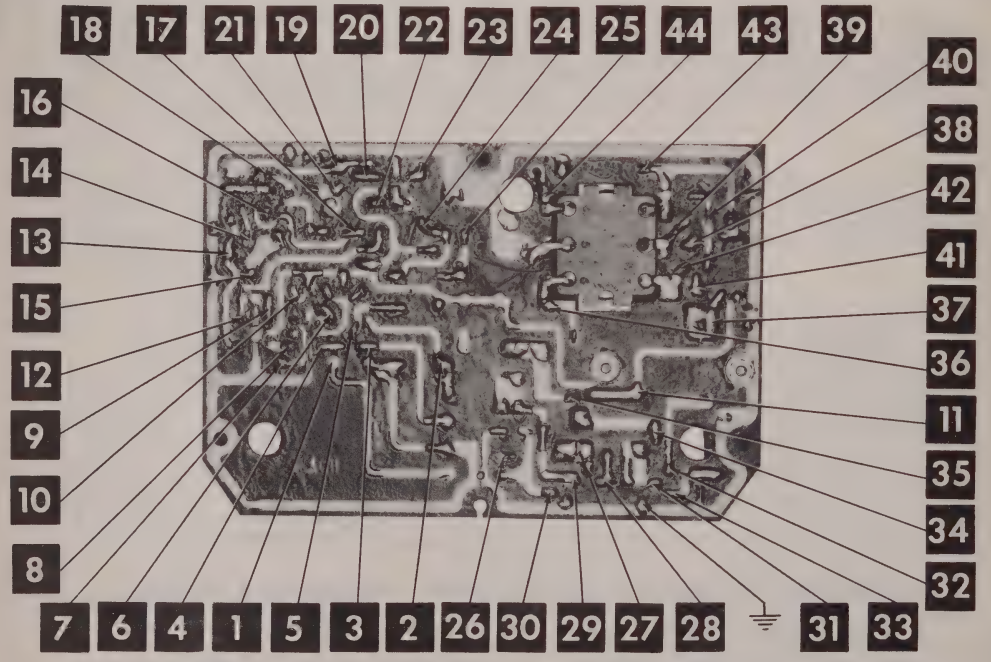
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

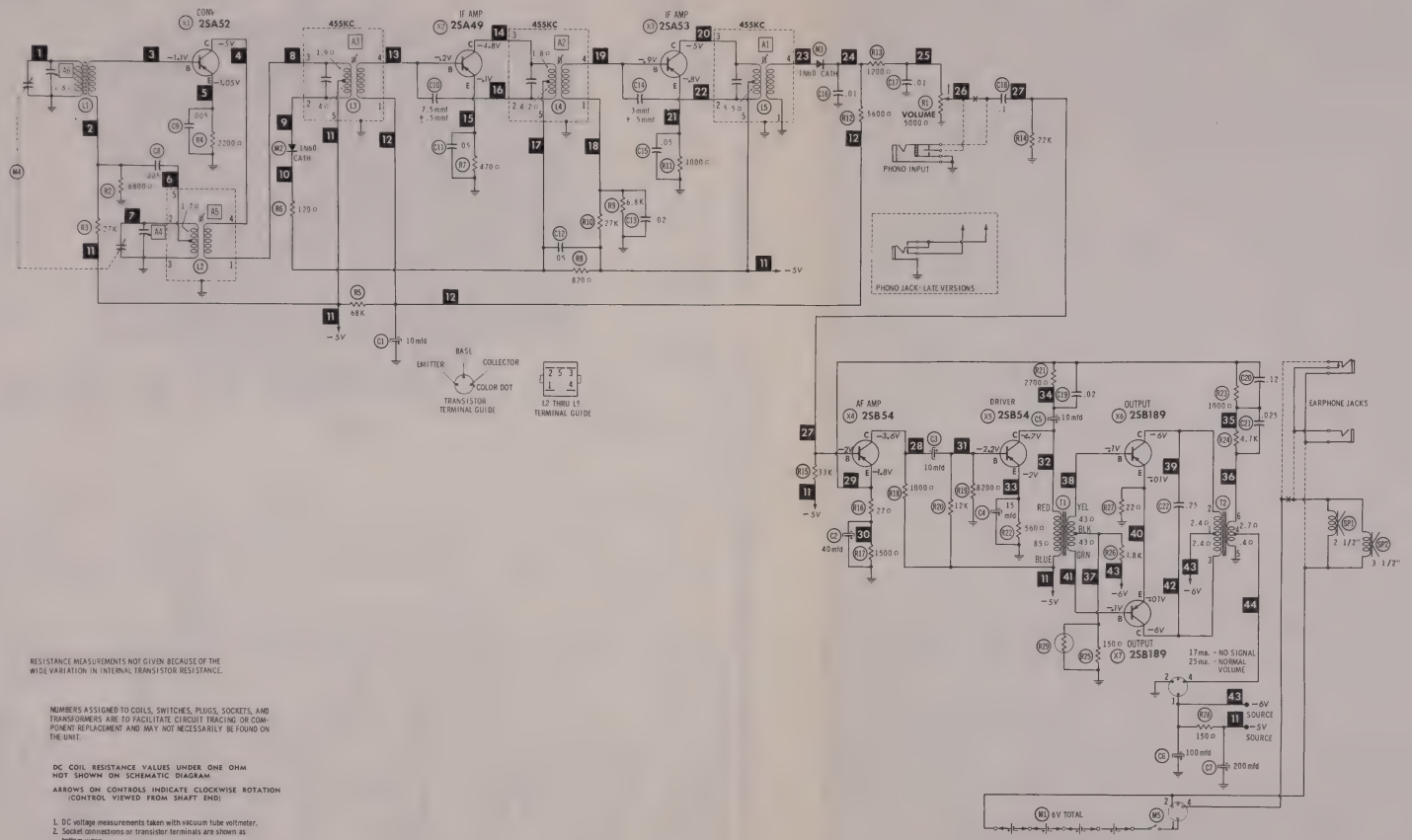


CHASSIS TOP VIEW – RESISTOR, INDUCTOR & TRANSISTOR IDENT.



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum; no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

CircuiTrace

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TOSHIBA MODELS
7TH-425, 7TH-425Y

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	150Ω CT	6-8Ω CT	MT-12100					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TOSHIBA PART No.	QUAM PART No.	
SP1	3½"	PM	6-8Ω	SP-3503B		
SP2	3½"	PM	6-8Ω	SP-3503B		

BATTERIES

ITEM No.	VOLTAGE	TOSHIBA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-1		230		A100		M-14R	4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		TOSHIBA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2	1N60			1N60	Overload (Pigtail)
M3	1N60			1N60	Detector (Pigtail)

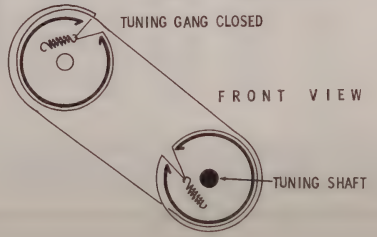
MISCELLANEOUS

ITEM No.	PART NAME	TOSHIBA PART No.	NOTES
M4	Tuning Cap.		2 Gang
M5	Switch		Power Off-On

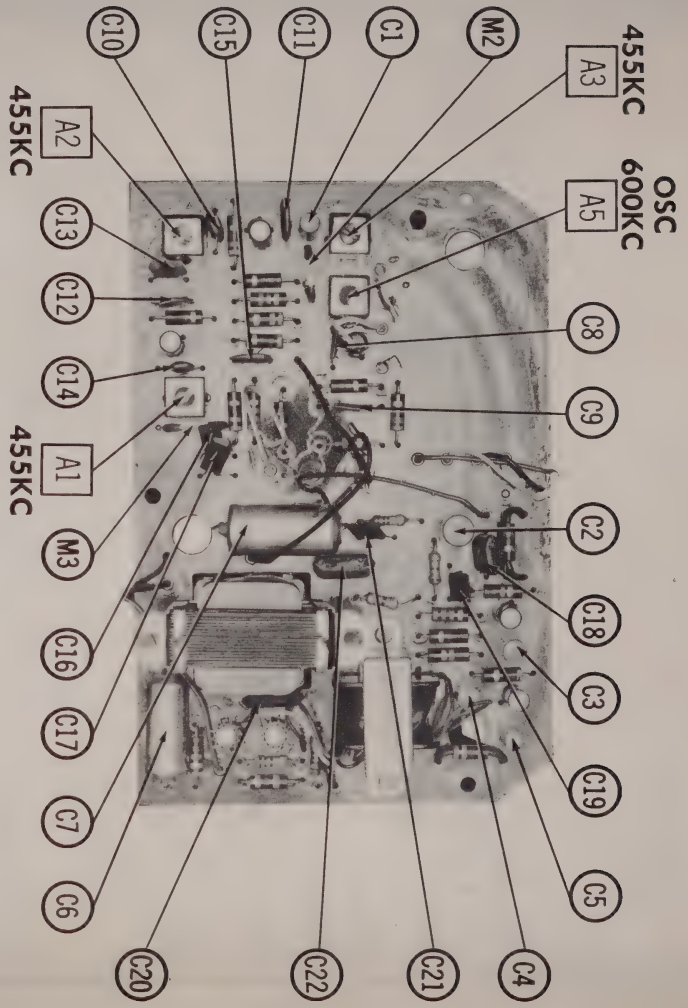
WIRING DATA

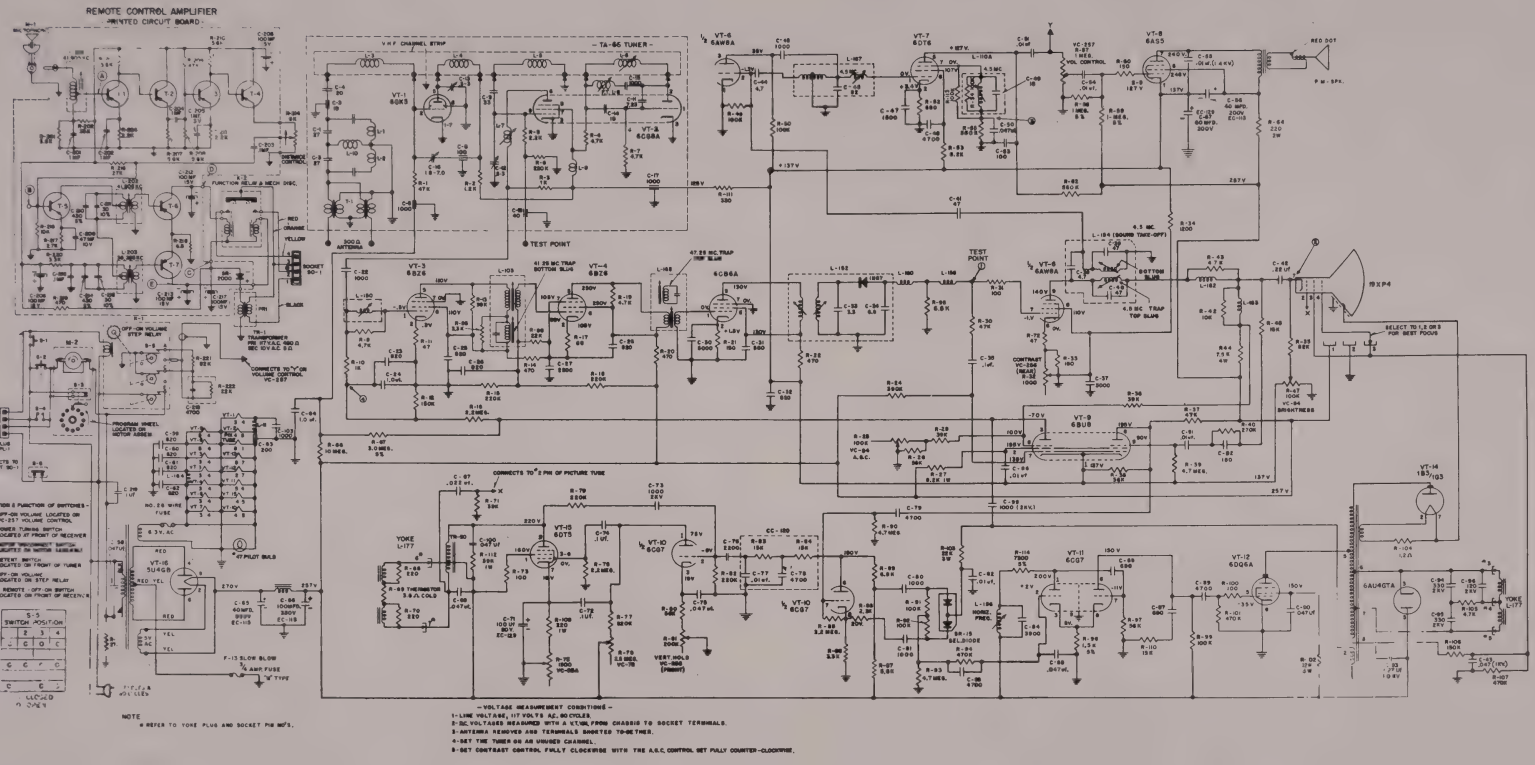
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

DRIVE CORD STRINGING



CHASSIS—TOP VIEW



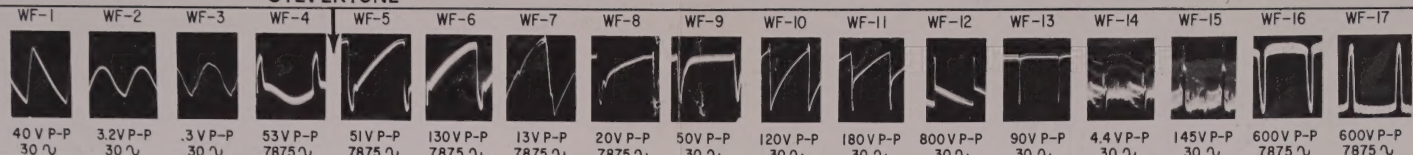

REMOTE CONTROL AMPLIFIER
PRINTED CIRCUIT BOARD
TA-66 TUNER
VHF CHANNEL STRIP
TEST POINT
VOLTAGE MEASUREMENT CONDITIONS
1-LINE VOLTAGE, 117 VOLTS AC, 60 CYCLES.
2-DC VOLTAGES MEASURED WITH A 20K/V. FROM CHASSIS TO SOCKET TERMINALS.
3-ANTENNA REMOVED AND TERMINALS SHORTED TOGETHER.
4-SET THE TUNER ON AN UNUSED CHANNEL.
5-SET CONTRAST CONTROL FULLY CLOCKWISE WITH THE A.G.C. CONTROL SET FULLY COUNTER-CLOCKWISE.
NOTE
REFER TO YOKE PLUG AND SOCKET PIN NO'S.

TRUETONE MODELS 2DC3248, 2DC3249

Schematic Diagram Courtesy of Western Auto Supply

← TRUETONE

SILVERTONE



UHF/VHF Tuner Schematic

SILVERTONE MODELS PC-2172, PC-2173, PC-2174, PC-2175, PC-2178, PC-2179, PC-21601, PC-21611, PC-21621, PC-21631, PC-21641 PC-21651, 2172, 2173, 2174, 2175, 2178, 2179, 21601, 21611, 21621, 21631, 21641, 21651 (CH. 456.52400, 456.52401, 528.52400, 528.52401)

Schematic Diagram Courtesy of Sears, Roebuck & Company

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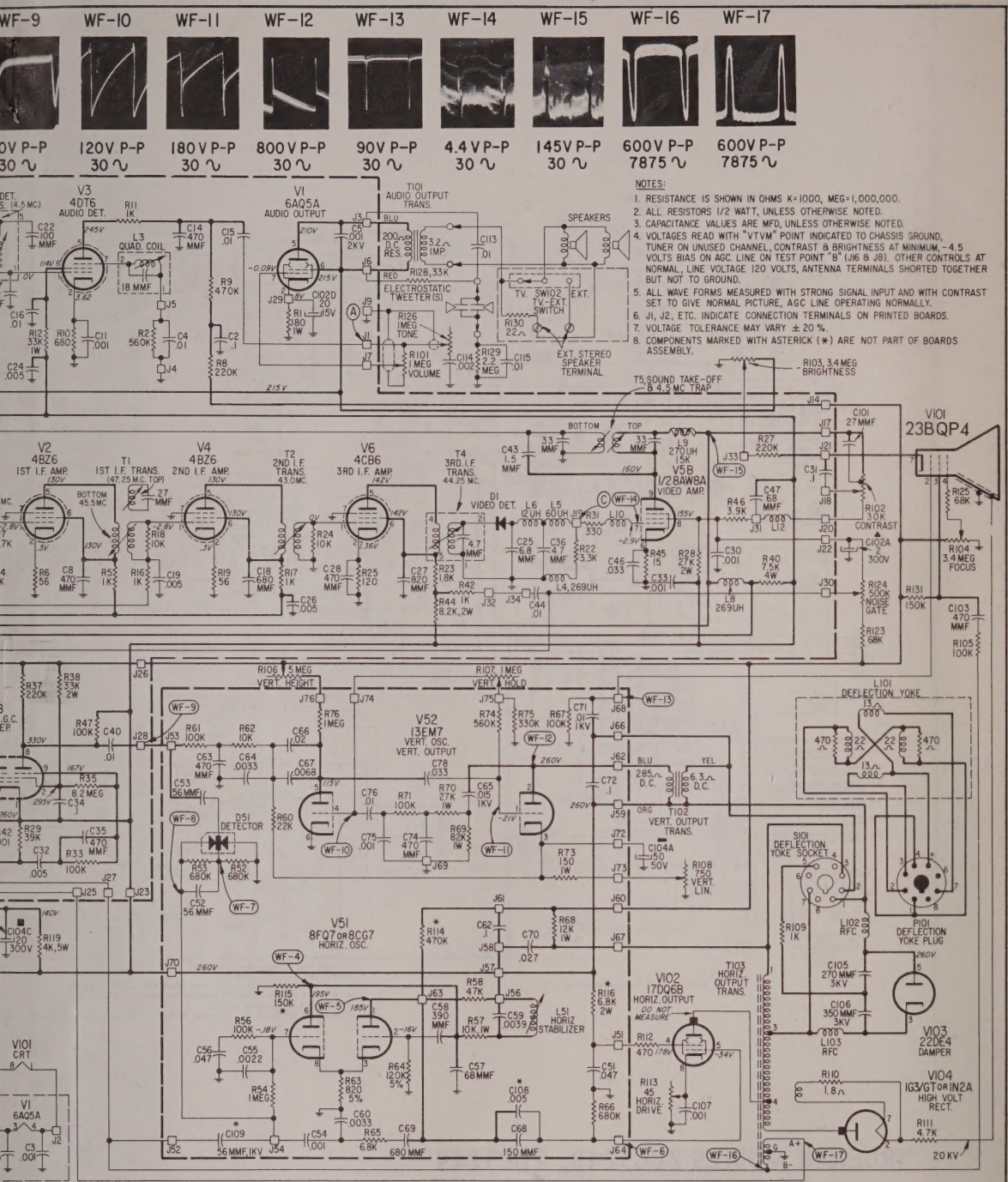
SET 551 FOLDER 15-S.


WF-9
WF-10
WF-11
WF-12
WF-13
WF-14
WF-15
WF-16
WF-17
120V P-P 30 ∿
180V P-P 30 ∿
800V P-P 30 ∿
90V P-P 30 ∿
4.4V P-P 30 ∿
145V P-P 30 ∿
600V P-P 7875 ∿
600V P-P 7875 ∿
NOTES:
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM, -4.5 VOLTS BIAS ON AGC LINE ON TEST POINT "B" (J16 & J8). OTHER CONTROLS AT NORMAL, LINE VOLTAGE 120 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER BUT NOT TO GROUND.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2, ETC. INDICATE CONNECTION TERMINALS ON PRINTED BOARDS.
7. VOLTAGE TOLERANCE MAY VARY ± 20 %.
8. COMPONENTS MARKED WITH ASTERICK (*) ARE NOT PART OF BOARDS ASSEMBLY.
V3 4DT6 AUDIO DET.
VI 6AQ5A AUDIO OUTPUT
TI01 AUDIO OUTPUT TRANS.
SPEAKERS
ELECTROSTATIC TWEETER(S)
TV. SWI02 TV-EXT SWITCH
EXT. STEREO SPEAKER TERMINAL
R103, 3.4 MEG BRIGHTNESS
T5, SOUND TAKE-OFF @ 4.5 MC TRAP
V101 23BQP4
V2 4BZ6 1ST I.F. AMP.
T1 1ST I.F. TRANS. (47.25 M.C. TOP)
V4 4BZ6 2ND I.F. AMP.
T2 2ND I.F. TRANS. 43.0MC.
V6 4CB6 3RD I.F. AMP.
T4 3RD I.F. TRANS. 44.25 MC.
D1 VIDEO DET.
V5B 1/2 8AW8A VIDEO AMP.
R102 30K CONTRAST
R104 3.4 MEG FOCUS
R124 500K NOISE GATE
R131 150K
C103 470 MMF
R105 100K
L101 DEFLECTION YOKE
SI01 DEFLECTION YOKE SOCKET
P101 DEFLECTION YOKE PLUG
L102 RFC
L103 RFC
V103 22DE4 DAMPER
V104 IG3/GT OR IN2A HIGH VOLT RECT.
R110 1.8Ω
R111 4.7K
20 KV
R106 5 MEG VERT. HEIGHT
R107 1 MEG VERT. HOLD
V52 13EM7 VERT. OSC. VERT. OUTPUT
T102 VERT. OUTPUT TRANS.
D51 DETECTOR
V51 8FQ7 OR 8CG7 HORIZ. OSC.
L51 HORIZ STABILIZER
V102 17DQ6B HORIZ. OUTPUT
DO NOT MEASURE
T103 HORIZ OUTPUT TRANS.
R108 150 VERT. LIN.
R113 45 HORIZ DRIVE
V101 CRT
VI 6AQ5A

PC-21601,
79, 21601,

Schematic Diagram Courtesy of Sears, Roebuck & Company

Dear PHOTOFACT *Standing Order Subscriber,*

This set contains your bonus lesson of the famous PHOTOFACT Color TV Training Course. There are sixteen in all, one to be packaged with each new PHOTOFACT set you receive on your PHOTOFACT standing order subscription for the months of August, September, October and November (Sets 541 through 556). Be sure and look for them.

We feel that this new bonus color TV course is so important to you that we have made it impossible for your lessons to be purposely or accidentally removed from the envelope before you receive it. The only sure method to guarantee your receiving this set complete with the Color Course lesson intact is to use the wire seal.

To insure easy removal of the wire seals, please take a screwdriver or similar instrument and pry the four ends of the wire seals to a vertical position. This will take a few seconds—but more important, will require only a few more moments to remove both wire seals completely.

We urge you to take full advantage of this new Color TV Training Course so you will be technically trained to profit from the rapidly developing color television service market in the months immediately ahead.

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

1

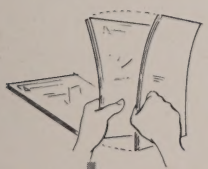
Bend up the ends of the wire-seals using a screwdriver or similar instrument. Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.



4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .